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THE

NATIONAL CYCLOPÆDIA

OF

USEFUL KNOWLEDGE.

VOL. IV.

CÆSAR—CÔTES-DU-NORD.

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CÆSAR, CAIUS JULIUS, the son of C. Julius Cæsar and Aurelia, was born B.C. 100, on the 12th of Quintilis, afterwards called Julius in honour of this Cæsar. His aunt Julia was the wife of Caius Marius. In his seventeenth year he married Cornelia, the daughter of Cinna, by whom he had a daughter, Julia. This connection with Marius and Cinná, the two great opponents of the dictator Sulla, exposed him to the resentment of the opposite faction. Sulla is said to have spared his life with great reluctance.

He first served under M. Thermus in Asia, and distinguished himself at the capture of Mitylène (B.C. 80 or 79). In the following year he served under P. Servilius Isauricus in Cilicia. The news of Sulla's death brought him back to Rome, B.C. 78. After his unsuccessful impeachment of Dolabella for mal-administration in his province, he retired to Rhodes, and for a time became the pupil of the rhetorician Molo, whose instruction Cicero had attended, probably a year or two before Cæsar's visit, B.C. 75.

About B.C. 69, being elected one of the military tribunes, he procured an enactment for the restoration of L. Cinna, his wife's brother, and of those partisans of M. Lepidus who after his death had joined Sertorius in Spain. The following year he was quæstor in Spain, and on his return to Rome, he was elected curule ædile for B.C. 65. The office of ædile gave Cæsar an opportunity of indulging his taste for magnificence and display, by which he secured the favour of the people. Cæsar, who was now five-and-thirty years of age, had enjoyed no opportunity of distinguishing himself in a military capacity; while Cn. Pompeius, who was only six years older, was spreading his name and the terror of the Roman arms throughout the East. By a judicious application of money among the poorer voters, and of personal influence among all classes, he obtained the Pontificatus Maximus (B.C. 63), or headship of the college of Pontifices, a place to which an official residence in the Sacra Via was attached. (Sueton. 'Cæsar,' 13, 46.) This union of civil and religious functions in the same person, at least in the higher and more profitable places, was part of the old Roman polity.

At the time of the debate on the conspiracy of Catiline (B.C. 63), Cæsar was prætor designatus (prætor elect for the following year), and accordingly spoke in his place in the senate. He was the only person who ventured to oppose the proposition for putting the conspirators to death: he recommended their property to be confiscated, and that they should be dispersed through the different municipia of Italy, and kept under a strict surveillance. [CATILINA.]

An affair which happened during Cæsar's prætorship (B.C. 62) caused no little scandal at Rome. While the ceremonies in honour of the Bona Dea were performing in the house of Cæsar, at which women only could be present, the profligate P. Clodius, putting on a woman's dress, contrived to get admission to these mysterious rites. On the affair being discovered, Cæsar divorced his wife Pompeia, whom he had married after the death of Cornelia; and Clodius, after being brought to a public trial for an offence against religion, only escaped by bribing the judices, or jury. (Cic. 'Ep. ad Att.' i. 12, &c.) From motives of policy, Cæsar did not break with Clodius: he probably saw that he could make him a useful tool against Cicero.

The year 61 B.C. was spent by Cæsar in his province of Southern Spain, where he speedily restored order, and he hurried back to Rome before his successor came to canvass for the consulship. The aristocratical party saw that it was impossible to prevent Cæsar's election; their only chance was to give him a colleague who should be a check upon him. Their choice of Bibulus was singularly unfortunate. Bibulus, after unavailing efforts to resist the impetuosity of his colleague, shut himself up in his house, and Cæsar acted as sole consul, B.C. 59. (Dion, xxxviii. 8.)

Cæsar had contrived to render ineffectual all opposition on the part of his opponents. Pompeius was dissatisfied because the senate delayed about confirming all his measures in the Mithridatic war and during his command in Asia; Crassus, who was the richest man in the state, and second only to Pompey in influence with the senatorial faction, was not on good terms with Pompeius. If Cæsar gained over only one of these rivals, he made the other his enemy; he determined therefore to secure them both. He began by courting Pompeius, and succeeded in bringing about a reconciliation between him and Crassus. It was agreed that there should be a general understanding among the three as to the

course of policy. To cement their alliance more closely, Cæsar gave Pompeius his daughter Julia in marriage. Cæsar also took a new wife on the occasion, Calpurnia, the daughter of L. Piso, whom he nominated one of the consuls for the ensuing year, B.C. 58. This union of Pompeius, Crassus, and Cæsar, destroyed the credit of Pompeius, threw disunion among the aristocrats, and put the whole power of the state into the hands of one vigorous and clear-sighted man. (As to the affair of Vettius [Dion, xxxviii. 9], see CICERO.)

One of the most important measures of Cæsar's consulship was an agrarian law for the division of some public lands in Campania among the poorer citizens, which was carried by intimidation. Clodius, the enemy of Cicero, was, through Cæsar's influence and the help of Pompeius, adopted into a plebeian family, and thus made capable of holding the office of tribune. Clodius, the next year, was elected a tribune, and drove Cicero into exile, B.C. 58.

The Roman consuls, on going out of office, received the government of a province for one year. Cæsar's opponents unwisely made another effort against him; they proposed to give him the superintendence of the roads and forests. Vatinius, one of his creatures, forthwith procured a law to be passed, by which he obtained for Cæsar the province of Gallia Cisalpina, or North Italy, and Illyricum, for five years; and the senate, fearing the people might grant still more, not only confirmed the measure, but added the province of Gallia Transalpina. 'From this moment,' remarks a lively modern writer (Schlosser 'Universal. Histor. Uebersicht'), 'the history of Rome presents a striking parallel to the condition of the French republic during Bonaparte's first campaigns in Italy. In both cases we see a weak republican administration in the capital involved in continual broils, which the rival factions are more interested in fostering than in securing the tranquillity and peace of the empire. In both cases we find a province of the distracted republic occupied by a general with unlimited power—the uncontrolled master of a territory which in extent and importance is equal to a mighty kingdom—a man of superior understanding, desperate resolves, and, if circumstances rendered it necessary, of fearful cruelty—a man who, under the show of democratical opinions, behaved like a despot, governed a province at his pleasure, and established an absolute control over his soldiers by leading them to victory, bloodshed, and pillage.'

The Gallic provinces at this time subject to Rome were: Gallia Citerior, or Cisalpine Gaul (North Italy); and Gallia Ulterior, or the southern part of Transalpine Gaul, also called emphatically 'Provincia' (whence the modern Provence), whose capital was Narbo, now Narbonne. The Provincia extended from the Mediterranean to the Cebenna Mountains, and included the modern provinces of East Languedoc, Provence, and Dauphiné. On the north it joined the Allobroges, then lately subjected to Rome. When Cæsar, in his 'Commentaries,' speaks of Gaul, which he divides into Aquitania, Celtica, and Belgica, he means the Gaul which was then independent, and which he conquered, exclusive of the Provincia already subject to Rome. Cæsar's campaigns in Gaul, which are the most eventful periods of his life, belong to the history of Rome. They comprise the time from the beginning of B.C. 58 to B.C. 51. During this period he stopped the Helvetii, who were emigrating from their native country, a part of modern Switzerland, with the intention of settling in the southern part of Gaul. He totally defeated Ariovistus, a powerful German chief, with immense slaughter. Some of the fugitives escaped across the Rhine in boats, and Ariovistus among them. The two sons of Ariovistus and one daughter were killed in the flight; and another daughter was taken prisoner.

The campaign of 57 B.C. was against the Belgic Gauls, a powerful race of German origin, who had been long settled in the country between the Rhine and the Sequana (Seine). The war was conducted with his usual vigour and success, though the resistance of some of the Belgic tribes, especially the Nervii, was most desperate. In this campaign Cæsar advanced north of the Axona (Aisne), a branch of the Seine. Crassus, the son of Crassus with whom Cæsar had made a coalition, being detached by Cæsar across the Sequana into Western Gaul, received the submission of the Aulerci, Unelli, and Veneti, and other maritime people on the coasts of the Atlantic; and, as the season was growing late, the army went into winter-quarters in the country of the Carnutes (about Orléans), Turones (Tours), and other parts of central Gaul. Cæsar set off, according to his custom, for Cisalpine Gaul, where his friends flocked from Rome to congratulate him on his successes. The senate, on receiving from the victorious general the usual official letters, ordered fifteen days of public thanksgiving to the gods, a period never granted before for any other general.

Cæsar's third campaign, 56 B.C., was against the Western Gauls, of whom the Veneti were a powerful commercial, sea-faring people, who had numerous ships in which they traded with Britain and other countries. Having recovered from the alarm of Cæsar's conquests, they arrested the officers of Crassus, and refused to give them up until their own hostages were restored. All the neighbouring maritime tribes made common cause with the Veneti. Cæsar immediately ordered galleys to be constructed on the Ligeris (Loire), and sent also to collect ships on the coast of the Pictones and Santones (Poitou and Saintonge), who were friends with Rome. He directed the fleet to attack the Veneti by sea, while he marched against them by land. The description of the ships of the Veneti, their naval tactics, their habits and mode of life, is one of Cæsar's most interesting sketches. A great naval battle, which lasted all day, ended with the destruction of the fleet of the Veneti, to the number of above 200 ships. Cæsar put to death all the senators or chief men of the Veneti, and sold the rest as slaves. After the defeat of the Veneti, Cæsar marched against the Morini and Menapii (Boulogne, Calais, &c., and further to the north and east). He placed his troops for the winter among the Aulerci, Lexovii, &c. (Normandy).

The following year, 55 B.C., the campaign was carried on against the Germans upon the Mosa (Moselle) and the Rhine, and they were defeated with great slaughter, probably near Coblenz, at the junction of the Moselle and the Rhine. After this battle Cæsar constructed a bridge over the Rhine, apparently not far below Coblenz, by means of piles driven in the bed of the river. He gives a minute description of the process of building the bridge (iv. 17). The bridge was finished in ten days, when Cæsar marched across, and ravaged the country of the Sicambri. He re-crossed the Rhine after spending eighteen days on German ground.

He next made his first expedition into Britain. [BRITANNIA.] In this year Cæsar's period of government was extended for five years by a Senatus Consultum.

The next year, 54 B.C., after making an excursion into Illyricum, Cæsar returned into Gaul, where he had ordered a fleet to assemble at Portius Itius (between Boulogne and Calais) for a second attempt upon Britain. [BRITANNIA.] On his return from Britain, owing to the bad harvest and scarcity of provisions, he dispersed his legions in various parts of the country for the winter, a measure which proved nearly fatal to the Roman arms. He himself remained in Belgic Gaul. The Eburones (Tongres), revolted and attacked the camp of Titurius Sabinus and L. Cotta, who had one legion and five cohorts with them. The Romans, against Cotta's opinion, made an effort to retire to the next Roman garrison, but they were attacked on their march and cut to pieces. The Eburones, under their king Ambiorix, next attacked the camp of Quintus Cicero, brother to the orator, who was stationed with one legion in the country of the Nervii. Quintus made a brave defence, and was finally relieved by Cæsar.

The following year, 53 B.C., which was the sixth of Cæsar's government, symptoms of general disaffection manifested themselves throughout Gaul. This was a year of desultory though destructive warfare. Cæsar crossed the Rhine again from the country of the Treviri (of which name Trier or Treves is the modern representative), having constructed a new bridge a little below the former one. This movement led to no result, and he withdrew his army across the Rhine, leaving part of the bridge standing for a future occasion. He then ravaged the country of the Eburones. Having put his legions to winter among the Treviri, Lingones, and Senones, Cæsar repaired to Cisalpine Gaul.

The disturbances at Rome in consequence of the murder of P. Clodius made Cæsar turn his attention towards that quarter. He raised troops in every part of the Cisalpine province. The Gauls now thought the time was come for one great effort while Cæsar was engaged in Italy. The Carnutes massacred all the Romans whom they found in the town of Genabum (Orléans.). Vercingetorix, a young man of one of the first families of the Arverni, was placed at the head of a confederacy of the whole of Celtic Gaul. Cæsar, hearing this news, set off in the middle of winter (beginning of 52 B.C.) for Gaul north of the Alps, and took Vellaunodunum, Genabum, and Noviodunum.

He also took Avaricum (Bourges), which was garrisoned by the Gauls, who made a courageous defence. The Roman soldiers killed all—old men, women, and children. But the great event of this campaign was the siege of Alesia, now a village called Saint Reine, and also Alise, near Flavigny, and Semur, in North Burgundy, ten leagues N.W. of Dijon. For this celebrated siege of Alesia we must refer to Cæsar's own account. ('Gallic War,' v.) Cæsar found himself besieged in his own lines, having to fight Vercingetorix who had retired within the town, and the confederates from without. Alesia finally surrendered, and Vercingetorix, several years later, walked before the triumphal car of the conqueror; after which he was put to death in prison.

Cæsar's eighth and last campaign in Gaul (51 B.C.) is related by Hirtius, who has continued his 'Commentaries' by writing an eighth or supplementary book. During the winter, which followed this campaign, he endeavoured to conciliate the principal inhabitants of Gaul by rewards, and treated the people with kindness; and, by rendering the Roman yoke light, he pacified Gaul, exhausted by its long and unfortunate struggle.

In the spring, 50 B.C., he set off for North Italy, where he was received with great rejoicings. On his return to Belgic Gaul, he reviewed his troops, and soon after returned to the north of Italy, where the dissensions between him and the Senate had begun which led to the civil war. This was the ninth and last year of Cæsar's government of the Gauls.

Cæsar's connection with Pompeius had been dissolved by the death of Julia without any surviving offspring, and by the growing jealousy with which his success in Gaul and his popularity with his army had filled all the aristocratical party. Cæsar's object now was to obtain the consulship a second time, and a special enactment had been already passed enabling him to stand for the consulship in his absence. But Pompeius prevailed upon the Senate to require him to give up the command of the army and come to Rome in person to be a candidate. Cæsar, who was now at Ravenna, in his province of Gallia Cisalpina, sent Curio to Rome with a letter expressed in strong terms (Cic. 'Ep. ad Div.' xvi. 11), in which he proposed to give up his army and come to the city, if Pompeius would also give up the command of the troops which he had. The Senate made a decree that Cæsar should give up his army by a certain day, or be considered an enemy to the state. The tribunes, M. Antonius and Q. Cassius, the friends of Cæsar, attempted to oppose the measure; but their opposition was treated with contempt, and thus they gained a good excuse for hurrying to Cæsar with the news. (Cic. 'Ep. ad Div.' xvi. 11.) Upon receiving the intelligence, Cæsar crossed the Rubicon, a small stream which formed the southern limit of his province, and directed his march towards the south, B.C. 49. Rome was filled with confusion; councils were divided and hesitating; and Pompeius, who was the commander-in-chief on the side of the Senate, was unprovided with troops to oppose the veterans of the Gallic wars. Domitius, who had thrown himself

into Corfinium to defend the place, was given up to Cæsar by his soldiers, who joined the invading army. The alarm now became still greater, and Pompeius, with a large part of the Senate and his forces, hurried to Brundisium, whence he succeeded in crossing the sea to Dyrrachium (Durazzo) in Epirus.

Cæsar, who had reached Brundisium before Pompeius left it, now advanced to Rome, and took possession of the public money, which the other party in their hurry had left behind. His next movement was into Spain, where Afranius and Petreius, who were on the side of Pompeius, were at the head of eight legions. After reducing this important province, Cæsar, on his return, took the town of Massilia (Marseille), the siege of which had been commenced on his march to Spain.

The title of dictator was assumed by Cæsar on his return to Rome, and he nominated himself and Servilius consuls for the following year, B.C. 48. The campaign of the year B.C. 48, which is described in the third book of the 'Civil Wars,' comprises the operations of Cæsar and Pompeius at Dyrrachium, and the subsequent defeat of Pompeius on the plain of Pharsálus, in Thessaly. After his defeat, Pompeius fled to Egypt, and on landing was treacherously murdered by Achillas, the commander of the troops of the young king Ptolemæus, and L. Septimius, a Roman, who had served under Pompeius in the war with the pirates.

Cæsar arrived in Egypt shortly after the death of Pompeius. The disputes in the royal family of Egypt and the interference of Cæsar brought on a contest between the Romans and the king's troops, which ended in a new settlement of the kingdom by the Roman general. Here Cæsar formed his intimacy with Cleopatra, the young queen of Egypt. Early in B.C. 47, Cæsar marched into Pontus, and defeated Phárnaces, the son of Mithridates. He returned to Italy in the autumn, by way of Athens. At Brundisium he was met by Cicero (Plut. 'Cic.' 39), who was glad to make his peace with Cæsar. On his return to Rome, Cæsar was named dictator for one year, and consul for the following year, with M. Lepidus. During the winter he crossed over into Africa—where the party of Pompey had rallied under Scipio—gained a complete victory at the battle of Thapsus, and was again at Rome in the autumn of B.C. 46. In the year B.C. 45, Cæsar was sole consul, and dictator for the third time. During the greater part of this year he was absent in Spain, where Cn. Pompeius, the son of Pompeius the Great, had raised a large force. The great battle of Munda, in which 30,000 men are said to have fallen on the side of Pompeius, terminated the campaigns of Cæsar. Pompeius was taken after the battle, and his head was carried to Cæsar, who was then at Hispalis (Seville).

On his return to Rome, Cæsar was created consul for ten years and dictator for life. On the ides (15th) of March, B.C. 44, he was assassinated in the senate-house. [BRUTUS, M. JUNIUS.] After his death he was enrolled among the gods, under the appellation of DIVOS IVLIVS, as appears from his medals. He left his chief property and his name to his great-nephew. [AUGUSTUS.]

The energy of Cæsar's character—his personal accomplishments and courage—his talents for war, and his capacity for civil affairs — render him one of the most remarkable men of any age. Though a lover of pleasure, and a man of licentious habits, he never neglected what was a matter of business. As a writer and an orator, he has received the highest praise from Cicero; and his 'Commentaries,' written in a plain, perspicuous style, are a model of their kind. His projects were vast and magnificent. He reformed the Roman calendar, under the direction of Sosigen. He established public libraries, and gave to the learned Varro the care of collecting and arranging the books. The three books of the 'Civil Wars' were written by Cæsar; but the single books on the Alexandrine, African, and Spanish wars, respectively, are generally attributed to another hand. The fragments of various other works of Cæsar's have been collected by his editors. The editions of the 'Commentaries' are very numerous; one of the best is that of Oudendorp, Leiden, 1757, 4to. They have been frequently translated into Spanish, French, English, Dutch, German, and Italian. The Greek translation of seven books of the Gallic War, attributed to Planudes, was first printed in Jungermann's edition, Frankfort, 1606, 4to.

CÆSARE'A, the name of several towns so called in honour of the Roman Cæsars. Cæsaréa, now Kesarieh, at the foot of Mount Argæus, was originally called Mazaca. (Strabo, p. 537.) Kesarieh is still a considerable town. Cæsarea in Palestine, on the sea-coast (Acts viii. 40; xxiii. 23), the birth-place of Eusebius Pamphili, received that name from King Herod, in compliment to Augustus Cæsar. Another Cæsarea in Palestine, north of the Sea of Galilee, is distinguished from that just mentioned by the name of Philippi (Matth. xvi. 13), having been repaired by Philip the tetrarch. Sometimes a town received a name compounded of both the titles, Cæsar and Augustus, as Cæsar Augusta, Saragossa, in Spain. [AUGUSTA.]

CÆSIUS BASSUS, a Roman lyric poet, who lived in the reigns of Nero and Vespasian. Persius addressed his sixth satire to him. Quintilian (xi. 1) speaks of him as perhaps next, but still very inferior to Horace. The Scholiast on Persius ('Sat.' vi. i.) says that he was burnt with his house in an eruption of Mount Vesuvius.

CÆSU'RA (that is, *cutting*) is the name given by ancient grammarians to the division of a verse into two or more portions by a pause or pauses, the position of which must be consistent both with the rhythm of the metre and the meaning of the words. If in any metre the termination of every foot coincide with the termination of a word, a painful monotony arises which would offend the ear.

CAFEIC ACID exists in coffee, which owes to it a part of its odour. It is combined with lime, magnesia, alumina, and iron, forming salts or *cafeates* of those bases. The alkaline cafeates are of a pure brown colour without any admixture of green, and by evaporating the solutions they are obtained in the state of brown horny masses. According to Pfaff, cafeic acid is com-

posed, in 100 parts, of carbon 29·1, hydrogen 6·9, oxygen 64.

CAFEINE, a neutral vegetable product obtained from coffee. During the cooling of a concentrated solution it crystallises in slender flexible needles, which are opaque and of a silky lustre; when they are obtained by slow spontaneous evaporation, they are long fine prisms, which are transparent, and but slightly flexible. Cafeine has little taste, but it is bitter and disagreeable. It readily fuses, becomes transparent, and sublimes without residue, and concretes in crystals resembling those of benzoic acid. Cafeine consists, in 100 parts, of carbon 46·5, hydrogen 4·8, oxygen 27·1, nitrogen 21·6.

CAFFA. [KAFFA.]

CAFFILA, or Kafila, is the term used in Northern Africa for those companies of travelling merchants which in Asia are called caravans.

CAFFRES. [AFRICA; CAFFRARIA.]

CAFFRARIA, CAFFRELAND, or more properly KAFIRLAND, from the Arabic word 'Kafir,' which means 'unbeliever,' 'not Mussulman,' is the name given by Europeans to the eastern part of South Africa, from the N.E. frontiers of the Cape Colony, about 32° S. lat. to Cape Corrientes or Inhambane in 24° S. lat. But the Caffre race extends much farther north and west, and in fact includes the Betchouanas and other tribes. The complexion of the Caffres varies from a yellowish brown or copper hue to that of deep black, but this last colour is not very common. The nose approaches to an arched form; they have thick lips and hair curly, but less woolly than the negroes. The Caffre females are among the handsomest in Africa.

The Arabian and other Mussulman traders and conquerors who formed establishments on the Mozambique coast, bestowed the general appellation of Kafir on the native population, with whose name they were unacquainted. The Portuguese, Dutch, and English, successively adopted the same designation for the inhabitants. So far as the country thus named can be defined, it comprises a strip of coast about 600 miles in length, by 100 in breadth, bounded inland by a range of mountains. The whole country is full of rugged hills and deep valleys. Caffre villages are scattered about, and numerous herds of cattle are seen grazing in the plains, while the lower sides of the hills exhibit patches of cultivated ground in all kinds of irregular shapes. Beasts of prey are not numerous: now and then a lion, and more frequently a tiger, or rather leopard, are met prowling in the more secluded ravines. Elephants were once numerous, but are now become scarce, except in the large forests near the St. John River and Port Natal. The hippopotamus is found in most of the rivers, and its flesh is eaten by the natives. Rhinoceroses lurk about the thick bushy coverts, as well as hyænas of a very ferocious species. The country abounds in game, antelopes, hares, pheasants, and partridges. There are many baboons and monkeys, and also serpents and other reptiles. Copper and iron ore is found in the mountains.

Four principal nations, originally of one stock, occupy the country from the frontiers of the Cape Colony to Dalagoa Bay: the Amakosa; the Amatimba, called by the Dutch Tambookies; the Amaponda or Hambona, whom the Dutch have christened Mambookies; and the Vatvahs or Zoolahs, sometimes called Amozoolah. The Amakosa dwell near the Great Key River; and the Amatimba north-eastward of them. The Amaponda are said to be a numerous tribe, and more industrious than the Amakosa and Amatimba: whilst the latter leave all the labour of the field to their women, the Amaponda men work as well as the women; they grow millet or Caffre corn, beans, pumpkins, sweet potatoes or yams, maize, and tobacco. The Zoolahs or Vatvahs are the most northern of the four tribes, and in recent years the most powerful. Their language differs somewhat from that of the southern Caffres. They are a fine athletic race; in war they carry large oval shields of bullock's hide, and a spear, besides a bundle of assagais. Their country is represented as very fine, rich in pasture, and abounding in cattle. The Vatvahs go generally naked, except when they put on their war-dress, consisting of skins round the middle, and feathers on the head; the women wear an apron of hide about the middle.

The tribes who live in the lowlands round Dalagoa Bay are said by Captain Owen to be industrious, well-behaved, and favourably disposed to trade with strangers. He mentions the arrival at Dalagoa Bay of a caravan from the interior, consisting of 1000 natives, with from 300 to 400 elephants' tusks, and a great quantity of cattle. Of the countries to the north of Dalagoa Bay we know very little; but several exploring expeditions have been made thither within the last few years. Mr. Duncan in 1844, and Lieutenant Ruxton in 1845, made excursions into the interior of those regions. The government of the Caffres is a sort of clanship system. The population of each Caffre tribe is divided into kraals or hamlets, containing from ten to twenty families, each family occupying a separate hut. There is a petty chief in each kraal, who exercises a kind of patriarchal authority over the people. A higher chief rules over a whole district, containing a certain number of kraals. These higher chiefs are hereditary and independent of each other, although they acknowledge to a certain extent the authority of the Umkumkani, or great chief of the whole tribe, who is supposed to be the original possessor of all the land and cattle within its territory. No individual is allowed to kill any of his cattle without permission of the chief, who claims part of the carcase as his right: likewise the first fruits of the season are not allowed to be gathered without permission of the great chief of the tribe. All the land is held in common, except a small patch to each family. The Caffres have no written laws, but certain long-established principles and usages, any infraction of which by a chief would be opposed by his subjects at large. The Caffres acknowledge the existence of a supreme being, for whom they have several names in the language, but they have no form of worship, and their notions of a future life are very vague and unsettled.

They have no idols, but have an abundance of superstitious usages.

The huts of the Caffres are hemispherical, and mostly from 18 to 20 feet in diameter, and from 6 to 7 feet high. They are made of flexible boughs covered with thatch, and plastered with clay or cow-dung. A few mats, coarse earthenware pots of native manufacture, a rush basket so closely woven as to contain liquids, a calabash, and a bundle of assagais—these constitute all the furniture of a common Caffre hut.

The result of the Caffre war in 1835 was to extend the limits of the colonial territory, from the Keiskamma to the Great Key River, by which a large and fine tract of country has been evacuated by the Amakosa, and left at the disposal of the British authorities. Another result was the emancipation of the Fingoes, a tribe who had been enslaved by the Zoolahs. In December 1836, the Caffres molested the colonists at Graham's Town. For many years afterwards, occasional skirmishes took place between the colonists and the Caffres; but at length, in April 1846, the Governor of Cape Colony declared war formally against the Caffres. Recent information from the Cape shows that much will yet have to be done before security can be restored to the colonists.

(*Travels, Narratives*, &c., by Riou, Owen, Boteler, and Alexander.)

CAFFRISTAN, a region among the Hindoo Coosh Mountains of Asia, bounded by Cabul, Cashgar, Badakshan, Koondooz, and Cashmere. The country is traversed by mere foot-tracks across the mountains and along the valleys. The hilly districts are sterile; but the valleys are rich in corn, fruit, and pasturage.

The people, to whom the name of Caffres or infidels has been given by their Mohammedan neighbours, and hence the name of this region, Caffristan, have no general name by which they distinguish themselves, but are split into numerous tribes, each of which has a name peculiar to itself. In their persons the Caffres are a fine race of people, with handsome features and fair complexions. As regards their civil government, it does not appear that the Caffres acknowledge any general head, each tribe being governed in all things by its own rulers, and engaging at times in feuds with other tribes. Their hostile feelings towards their Mohammedan neighbours are very intense, inasmuch as no Caffre is deemed worthy of honour till he has killed a Mohammedan. Their warlike weapons are a bow about 4½ feet long and arrows of reed with barbed heads, which are sometimes poisoned. For closer conflict they are each provided with a dagger and a knife: recently they have begun to adopt the use of swords and muskets, in imitation of their enemies.

The Caffre villages are mostly built on the slopes of hills, the houses, which are made of wood, being placed one above another, the roof of the lower house forming a pathway to the one above it. One of these villages is said to contain 500 houses.

In their religion the Caffres are said to acknowledge only one supreme God, but to give worship also to numerous idols who are supposed to intercede for them. In their domestic relations the Caffres purchase their wives, and adopt a system of domestic slavery. Several dialects are spoken by the different tribes in Caffristan, but there are many words which are common to the whole people: the original language is supposed to have been derived from the Sanscrit.

(Elphinstone's *Cabul.*)

CA'GLIARI, the Roman *Cáralis*, the capital of Sardinia, and the residence of the viceroy, is in the south part of the island, on the bay of Cagliari, in 39° 13′ N. lat., 9° 7′ E. long., and has a population of 29,000. It is built partly on the sea-side, and partly on the slope of a steep hill, on the highest part of which is the castle, with the royal palace. Cagliari is the seat of an archbishop. There is a university, with the four faculties of theology, law, medicine, and philosophy and belles lettres; several fine churches, one of which is a cathedral; a library of 15,000 volumes; a museum with good collections of minerals, birds of the island, and medals, including some of the Carthaginian period; a college, a diocesan seminary, a public grammar-school, and several elementary schools. The town is the seat of the supreme court for the south division of the island and of a tribunal of commerce. The harbour is safe, and large ships find good anchorage in the bay. The exports consist of cheese, wine, oil, salt, flax, hides, and horses. Arms, gunpowder, salt, and tobacco, are the principal manufactures.

CAGLIA'RI, PAOLO, called PAOLO VERONESE, from the place of his birth, was born at Verona, in the year 1532. While yet young he visited Venice, where he was commissioned to execute some paintings in the church and sacristy of St. Sebastian. From this time his wealth and fame increased rapidly. He subsequently went to Rome, and in the course of his life visited numerous towns of his native country, in which he left behind him many lasting memorials. He lived a life of uninterrupted labour and success, and died at Venice in the year 1588. Paolo Veronese ranks among the greatest masters of the art, especially as a colourist. His principal works are at Venice.

CAGLIOSTRO, ALEXANDER, commonly called COUNT DE, an impudent and successful impostor. His real name was Joseph Balsamo, and he was born at Palermo in 1743. After living for years by fraud in all the chief towns of Italy, he proceeded to Holstein, Russia, and Poland, as an alchemist, with some success. In 1780 he was at Strasburg as a physician, and pretended to restore the aged to youth, in which deception his handsome wife, who being twenty affirmed she was sixty, assisted him. They were together next in Paris, where, in 1785, he was deeply implicated with the Cardinal Duke de Rohan in the affair of the diamond necklace, and for which he was sent to the Bastille. On his release he came to England, for two years imposing on the credulity of the public, and in 1789 proceeded to Rome, where he was arrested, tried, and sentenced to death for being a *freemason*. The punishment was commuted to perpetual imprisonment, and he died in 1795. His wife was at the same time condemned to pass her life in a convent.

CAGNO'LA, LUIGI, the most distinguished Italian architect of the present century, was born at Milan in 1762. At the age of fourteen, Luigi was sent to the Clementine College at Rome, where he applied himself entirely to the study of architecture.

The death of his father, in 1799, devolved upon Cagnola an important share in public affairs. On the change of the government by the establishment of the Cisalpine Republic, he spent about two years at Verona and Venice, where he found sufficient and congenial occupation in studying the architectural treasures of those cities. Soon after his return, he erected in 1802 a noble villa at Cremi, near Vajano. It was about the same period that he designed the magnificent *catafalchi* for the funeral obsequies of Archbishop Viconti, the Patriarch Gamberi, and Count Anguissola. On the marriage of the viceroy Eugene Beauharnois with the Princess Amelia of Bavaria in 1806, he was called upon to erect another grand temporary structure. Such was the admiration excited by the arch constructed of wood on that occasion, that it was determined to perpetuate it in marble. Accordingly, the first stone of the Porta del Sempione, or, as it is now called, the Arco della Pace, was laid October 14, 1807. Cagnola saw the whole structure terminated, or very nearly so, before his death, exclusively of some of the decorative sculpture and bronze figures. With the single exception of the Arc de l'Etoile, at Paris, the Arco della Pace is by far the largest as well as most magnificent structure of the kind in modern times.

Another public monument by him at Milan, is the Porta di Marengo, otherwise called Porta Ticinense. Nothing can be more simple or even severe in character than this structure, for it is one of the very few things in Italian architecture which decidedly approximates to the taste of Grecian antiquity.

The Campanile at Urgnano in the Bergamasque territory, begun in 1824 and finished in 1829, exhibits more of design and composition than the preceding. Among other works executed by Cagnola are the chapel of Santa Marcellina in the church of St. Ambrogio, at Milan; the church at Concorrezzo; the façade of that at Vivallo; and the church at Ghisalba in the Bergamasque. Cagnola died of apoplexy, in 1838.

CAHORS, capital of the former district of Quercy and of the present department of Lot, in France, stands on a peninsula formed by the River Lot, in 44° 27′ N. lat., 1° 26′ E. long., at a distance of 358 miles S. by W. from Paris, and has a population of 12,852. Cahors is a very ancient place. The earliest name by which it is mentioned is *Divona*, which is found in Ausonius. From the Cadurci, a Celtic tribe, whose capital it was, it was afterwards called *Civitas Cadurcorum*. From the name of this tribe the names Quercy and Cahors are said to be derived. The town is situated partly on a rocky eminence, and has steep, narrow, crooked streets. The houses in what is called the upper town are commonly built with terraces commanding a wide prospect. The few remarkable buildings are—the ancient cathedral, part of which dates from the 7th century; the ecclesiastical seminary; the former episcopal palace, now the residence of the prefect; the theatre; the public library; and the obelisk erected to the memory of Fenelon. The principal Roman remains are the ruins of a theatre and an aqueduct. The Lot is crossed at Cahors by three bridges, one of which, the Pont-Louis-Philippe, recently erected, replaces the old bridge of Notre-Dame. The Pont-Valendré, a structure of the 13th century, is surmounted by three high square towers, one at each end and one in the centre. The old ramparts of the town are now converted into promenades. Cahors is the seat of a bishop, whose see is the department of Lot. It has tribunals of first instance and of commerce, and a university-academy, which has jurisdiction over the departments of Lot, Lot-et-Garonne, and Gers. In connection with the academy there is a royal college in the town, and spread over the three departments, 10 communal colleges, 48 boarding-schools, 2 primary normal schools, and 1451 day schools. The bishops of Cahors were formerly temporal lords of the town, and bore the title of count. The chief manufactures of Cahors are china-ware and delf, cotton yarn, and leather; there is a considerable trade also in leaf tobacco, the wines of the neighbourhood, brandy, truffles, oil, cattle, and hides.

(*Dictionnaire de la France*; Balbi, *Géographie*.)

CAIMAN. [CROCODILE.]

CAIRN, or CARN, a heap of stones thrown together in a conical form. Lhuyd, in his 'Additions to Camden's Britannia, in Radnorshire,' asserts that in the Cambro-Britannic *Kaern* is a primitive word appropriated to signify such heaps of stones. Cairns and tumuli of earth were the common monuments which the ancient Britons erected in honour of their great men. Pausanias (10, 5, 4) mentions monuments of collected stones, and in another passage (8, 13, 3) he speaks of similar monuments near Orchomenus, in Arcadia, for persons who had fallen in battle.

CAIRNGORM MOUNTAINS, a vast mass of mountains partly in Aberdeenshire, one of which, Ben Muc Dhu, is 4390 feet high, 20 feet higher than Ben Nevis, and the highest summit in Great Britain. [ABERDEENSHIRE.]

CAIRO. [KAHIRA.]

CAISSON. [BRIDGE.]

CAIUS. [GAIUS.]

CAIUS, DR. JOHN, was born in 1510. His real name was Kaye, or Key, which he latinised to Caius. He was sent to Gonville Hall, in the University of Cambridge: he took the degrees of B.A. and M.A. at the usual times, and was chosen Fellow of his college in 1533. He studied medicine at Padua, and took the degree of Doctor at Bologna. In 1542 he gave lectures at Padua on the Greek text of Aristotle. The following year he made the tour of Italy. At Pisa he attended the medical lectures of Matthæus Curtius, and then returned home. On his return he was incorporated Doctor of Physic at Cambridge, and practised with great distinction at Shrewsbury and Norwich. By the appointment of Henry VIII. he read lectures on ana-

tomy to the Company of Surgeons; but he does not appear to have settled in London till a later period, when he was made physician to Edward VI. He retained his appointment under Mary and Elizabeth.

In 1547 Dr. Caius became a Fellow of the College of Physicians, of which he was president for more than seven years. Having obtained permission from Queen Mary to advance Gonville Hall into a college, which still bears his name, he accepted the Mastership of the college, and passed the last years of his life in it. Dr. Caius died in 1573, in the 63rd year of his age.

The most interesting of the works of Dr. Caius is his treatise on the sweating sickness. The epidemic described by him was that of 1551, the fifth and last of the kind. It was an intense fever, of which the crisis consisted in a profuse perspiration.

The works of Dr. Caius are exceedingly numerous, and display his talents as a critic, a linguist, a naturalist, and an antiquary, as well as a physician.

CAIUS COLLEGE, Cambridge, or more properly Gonville and Caius College, was founded in 1348 by Edmund de Gonvill, rector of Terrington and Rushworth, in Norfolk, who, however, died before his intentions were completed, and they were carried into effect by William Bateman, bishop of Norwich. Various other benefactors added to its endowments, especially Dr. Perse, who founded six fellowships, and gave to the college the right of appointing the master of the free school, which he had established at Cambridge.

In 1557 Dr. John Caius, having rebuilt a large part of the college, erected the chapel, and endowed three additional fellowships and twenty scholarships, obtained from Queen Mary leave to be a co-founder, and to change the name from Gonvill Hall to Gonville and Caius College.

The present establishment is as follows:—A master; twelve senior fellows, of whom three are of the original foundation, three of Dr. Caius's foundation, two of whom must be physicians, and all Norfolk men, and six of various founders, five of whom must be priests, and two of these must belong to the diocese of Norwich; eight junior fellows, one of whom must be a priest of the Norwich diocese—out of these the senior fellows are elected; six fellows of Dr. Perse's foundation, preference being given to scholars of Perse's Grammar School; three fellows of Mr. Wortley's foundation, one confined to part of Devon and one to Norfolk: twenty-nine scholars, the aggregate revenue of whom is 1035*l.*; two of the scholarships are confined to students from Harrow School, and one to a student in chemistry. There are eight exhibitions, amounting together to 120*l.* per annum. The number of members resident and non-resident in 1846, according to the Cambridge Calendar, was 334. The annual value of the 17 church livings in the patronage of this society amounts, according to the Ecclesiastical Returns (1835), to between 8000*l.* and 9000*l.*

(Speed's *Chronicle*; Dyer's *History of Cambridge*; and the *Cambridge Calendar of* 1846.)

CAITHNESS, a county which occupies the north-eastern extremity of Scotland. It is bounded on the west by Sutherlandshire; on every other side it is washed by the ocean. The coast-line presents numerous indentations or bays. On the north, where it is separated from the Orkneys by the Pentland Frith, the projections of the coast form two bold precipitous headlands; the one on the north-east, called Duncansby Head (58° 37′ N. lat., 3° 1′ W. long.), the other on the north-west, called Dunnet Head, 58° 40′ N. lat., and the most northern point of Great Britain. Nearly in the centre of the mouth of frith, between these two points, lies the Isle of Stroma, forming a portion of the shire. The extreme length of Caithness, by a line drawn from its south-west point to Duncansby Head, is 40 miles; the greatest breadth from east to west is about 30 miles. The population in 1841 was 36,343.

There is a ridge of mountains between this county and Sutherland, and two other ridges, which cross the southern part of the county. One of the summits reaches a height of 2334 feet. The county between these ridges is mostly a plain, with a few low hills. Agriculture is confined to the plains and lower slopes.

The navigation of the Pentland Frith is somewhat dangerous from the strength of the currents, and breakers or reefs. On the north side of Stroma there is a small vortex or whirlpool, named Swalchie, and nearer the main-land there are breakers, called the Merry Men of Mey. The Stalks of Duncansby are two insulated columns of freestone, detached from the cliff, of which they originally formed a part; they are inhabited during the summer by thousands of aquatic birds. What is termed John O'Groat's House is a piece of green turf on the east side of Duncansby Head, on which it is possible a house may have stood, but there has been no trace of one for many years.

The cold winds which, during a great part of the year, sweep across the country from the north-east and north-west, stunt all vegetation; trees will not rise higher than the shelter which is afforded to them. But considerable improvements have been effected latterly; new roads have been formed; and, should the herring-fishery on the east coast prove a permanent source of employment, it will tend to draw out the resources of the county.

The chief town is Wick, on the bay of Wick, on the east coast, with the suburb of Pulteney Town, which is situated on the opposite side of the harbour, and connected with Wick by a bridge. Wick has a good harbour, and is the greatest station in the north of Scotland for the herring fishery. Grain, wool, and the proceeds of the fishery, are the chief exports. In 1845 the number of vessels inwards was 609 (24,138 tons); outwards 608 (25,929 tons). The population in 1841 was 1333. Thurso, on the north coast, about 20 miles north-west from Wick, is the only other town in Caithness: it had in 1841 a population of 2510.

(Macculloch's *Highlands*, vol. ii.; *Summer*

Rambles in the North Highlands; Boundary Reports, Scotland; Population Returns.)

CAJEPUT. [MELALEUCA CAJEPUTI.]

CAKILE, a genus of plants belonging to the natural order Cruciferæ. *C. maritima*, Purple Sea-Rocket, is a native of Europe, along the sea-coast from Sweden and Lapland to Gibraltar; it is also found on both sides of the Mediterranean. It is a native of Great Britain, on the sea-coast. This plant had at one time a reputation as a cathartic, but it is not employed at the present day.

CALABAR, NEW, called *Rio-Real* by the Portuguese, is a river which enters the Bight of Biafra by the same æstuary as the Bonny. It is evidently one of the branches of the Quorra, or Niger. The town of New Calabar stands on an island in the river. The trade carried on here and on all the rivers that fall into the Bight consists in slaves, ivory, and palm-oil, for which cotton-cloths, hardware, guns, and powder, are taken in exchange. Salt made by evaporation is an important article of trade with the interior.

CALABAR, OLD. [BIAFRA, BIGHT OF.]

CALABASH, a name given in the West Indies to the fruit of the tree called *Crescentia Cujete* by botanists.

CALA'BRIA, the southern part of the kingdom of Naples, consists of two peninsulas of very nearly equal length, joined by a narrow neck only 14 miles broad, between the Gulf of Squillace and Sant' Eufemia. The area is about 7000 English square miles.

The Apennines run through the whole length of Calabria, forming large and irregular masses, with numerous offsets towards both seas, and occupying the greater part of the surface. The Calabrian Apennines are chiefly of limestone, but there are also tracts occcupied by primitive rocks. A granitic ridge passes through the country, and rises to the height of several thousand feet. Between the various masses and offsets are some extensive valleys along the banks of the principal rivers, which terminate in plains near the sea. The olive, the vine, the mulberry, and the orange and lemon tree grow luxuriantly. Calabria produces a variety of good wines, some of which keep very well for years. Silk and oil are the staple productions of the country. Manna is gathered in considerable quantity in several districts. The cotton plant is also cultivated, and the sugar cane has been tried and found to succeed.

Calabria is divided, for the purpose of administration, into three intendenze or provinces:—Calabria Citra, Calabria Ultra I., and Calabria Ultra II. The first contains the districts of Cosenza, Castrovillari, Rossano, and Paola; and the towns of Cosenza, Acri, S. Giovanni à Fiore, Rossano, Corigliano, Cassano, Castrovillari, Paola, Amantea, Cetraro, Diamante, and Guardia. The second contains the districts of Reggio, Gerace, and Palmi; and the towns of Reggio, Bova, Geraee, Palmi, Scilla, and many smaller towns and villages. The third contains the districts of Catanzaro, Cotrone, Nicastro, and Monteleone, and the towns of Catanzaro, Cotrone, Squillace, Nicastro, Maida, Monteleone, Pizzo, and a few others. None of these towns have so many as 10,000 inhabitants, except Reggio (the capital of Calabria) and Catanzaro, which have 20,000 and 12,000 respectively. The whole provinces contain 401 communes. The population, in 1844, amounted to:—

Calabria Citra	416,448
Calabria Ultra I.	289,329
Calabria Ultra II.	368,781
	1,074,558

The extensive region now known by the name of Calabria was in the Roman times chiefly occupied by the Brettii or Bruttii. The east coast was early colonised by Greeks, and became known, with the rest of the coast as far as Tarentum, by the general denomination of Megale Hellas or Magna Græcia. The first Norman conquerors took the titles of Dukes of Apulia and Calabria. Under the Angevins, the presumptive heir to the throne was styled Duke of Calabria, which custom has continued to this day. Calabria made a determined resistance against the French, first in 1799, when the Calabrians under Cardinal Ruffo reconquered the kingdom, and afterwards in 1806-7, when they waged a partisan warfare against the invaders. They were not ultimately subdued till 1810, when General Manhes armed one part of the population against the other, and by terror and bloodshed extirpated the malcontents.

Most of the towns of Calabria are built on conical hills, which they crown to the very top; the lower houses being joined together by thick walls constitute a kind of rampart. The women wear a body dress with full sleeves, and a thickly plaited petticoat of coarse cloth, and on the head a cloth folded like a napkin. The men wear short jackets, and close hose, generally of black cloth, leather gaiters or coarse stockings, with shoes of undressed skin tied by thongs half way up the leg, sandal fashion. Their hats are conical and high, with hardly any brim to them.

(Colletta, *Storia del Reame di Napoli*; Elmhirst's *Six Months' Residence in Calabria Ulterior*; Keppel Craven's *Travels*.)

CALA'DIUM, a genus of plants belonging to the natural order *Aroideæ*, and to the tribe *Caladieæ*. Several of the species of this genus are frequently cultivated in this country for the sake of their spotted stems and neat green leaves, which are rarely disfigured by any of the accidents which affect other stove plants. They have the same general appearance as the species of Arum, and also resemble them in physical and chemical properties.

C. Seguinum, Dumb-Cane, is a native of South America and the West Indies. It grows to a height of five or six feet. It secretes an acrid poison, so that when any part of the plant is chewed the tongue swells and the power of speech is lost. It is on this account called *Dumb*-Cane. Notwithstanding its poisonous nature, P. Browne says that, in common with the Arum ovatum, its stalk is used to bring sugar to a good grain, when it is too viscid, and cannot be made to granulate with lime alone. *C. sagittifolium*, Brazil Cabbage, is a native of the West Indies, and is called by the French Chou-de-Bresil, and by the Germans

Essbare-Arum. In appearance it resembles Arum colocaria, and is used for the same purposes. Both the leaves and rootstock of this plant are eaten. The leaves are boiled and eaten as coleworts; the rootstock is not considered so great a delicacy as the leaves. Of all the eatable Aroideæ, this appears to be the most extensively cultivated. *C. esculentum* resembles the last; it is also a native of South America, and is cultivated on account of the starch contained in its rootstock. It possesses similar properties to the last.

CALAHORRA, a town in the province of Soria in Spain, stands on the Cidacos, near its junction with the Ebro, in 42° 15′ N. lat., 2° 1′ W. *long.*, and has a population of about 7000. It is a very old-looking place and has long been going to decay. It contains a *plaza* or square, a cathedral, some distilleries, tanyards, oil and flour mills, a foundling hospital, and an asylum for old labouring men. The environs are very fertile, but they and the town are often damaged by the inundations of the rivers. Calahorra is the ancient *Calagurris*. The town was taken in 70 B.C. by Afranius after a most desperate resistance by the inhabitants, who had to endure the horrors of a frightful famine. Of the Roman town some towers and an aqueduct still remain. Calagurris was the birthplace of Quintilian. (Val. Max. vii. 6; Florus, iii. 22.)

CALAIS, a fortress of the first class and a seaport town in the department of Pas-de-Calais in France, stands on the eastern shore of the English Channel in 50° 58′ N. lat., 1° 51′ E. long., at a distance of 22 miles from Dover, 20 from Boulogne, and 184 from Paris by the Paris and Boulogne railroad. It has a population of 12,580, many of whom are English. In the 9th century Calais was a mere fishing village. Baldwin IV., Count of Flanders, improved the harbour in 997, and built two strong towers for its defence. In 1224 Philippe of France inclosed the town with a solid wall which still remains, and with deep ditches on the land side. The same Philippe in 1227 erected the Castle of Calais, which was demolished in 1560 and replaced by the citadel that still remains. After the battle of Crecy, Edward III. invested the town on the 1st of August, 1346. The firm resistance of the townsmen, who were suffering all the horrors of famine, the dastardly conduct of the French king, who, though at the head of 60,000 men, feared to attack the English position, the cruel terms imposed by Edward, the noble self-devotion of Eustache St.-Pierre and his companions, and the generous and successful intercession of Queen Philippa, are well known. The king made his entry into Calais on the 29th of August 1347, expelled all the inhabitants, repeopled the town with English, and sent the garrison prisoners to England. The English improved the town, and added to its defences; they held it till 1556, when the Duke of Guise took it by storm after a siege of seven days, and drove all the English from the town. Since that time Calais has remained in the hands of the French.

Calais is girt by the sea on the north and west, and on the south and east by low marsh land which can be flooded except for a space of about 250 yards, and this point of approach is rendered inaccessible by the fire from the forts. The harbour is formed by two moles three quarters of a mile long; it admits vessels of 400 to 500 tons, and has steam communication with Dover twice a day, and with London several times a week. The spot on which Louis XVIII. landed in 1814 is marked by a pillar. From the port the town is entered by a gate erected by Cardinal Richelieu in 1685. The town is pretty well built; the streets are straight, clean, and well paved; the houses, constructed of stone and brick. The centre of the town is occupied by the Place-d'Armes, a spacious square which serves as a market-place. In this square stands the Hôtel-de-Ville, in front of which are statues of Eustache St.-Pierre, the Duke of Guise, and Cardinal Richelieu. A tower 124 feet high stands in the centre of the Place-d'Armes which serves as a landmark by day and a lighthouse by night. The cathedral was built during the English occupation of the town; it is a handsome Gothic building, contains 11 side chapels, and a picture of the Assumption by Vandyke. The other remarkable buildings are the Hotel-de-Guise, in which Henry VIII. used to lodge, the public library, the theatre, and the barracks. The outer ramparts and the mole afford excellent promenades.

Calais possesses a tribunal and chamber of commerce, and schools of design and hydrography; it has some foreign and a brisk coasting trade; vessels belonging to the town are employed in the cod, herring, and mackerel fisheries. Corn, wine, oil, brandy, linen, wood, coal, eggs of which 55 millions are annually sent to England, and colonial produce, are the principal articles of commerce. The town has communication by canals with Arras, Dunquerque, Gravelines, and St.-Omer. It used to be the principal landing-place for English travellers in France, but in this respect it is now surpassed by Boulogne. Calais is becoming a manufacturing town, and the inner ramparts have been removed to make room for mills. The principal fabric is bobbin-net, of which the weekly production is 900 pieces of 49½ yards each; this manufacture gives employment to great numbers in the town, the suburb of St.-Pierre, and the villages of the neighbourhood. Other articles of manufacture are soap, straw bonnets, and leather. There are also steam flour and oil mills, salt and sugar refineries, and yards for boat and ship building.

(*Dictionnaire de la France;* Macgregor's *Statistics.*)

CALAIS, PAS DE. [PAS-DE-CALAIS.]

CALAIS, ST. [SARTHE.]

CALAISIS, a district of Picardie, of which Calais was the capital. It now forms the northern part of the arrondissements of Boulogne and St.-Omer in the department of PAS-DE-CALAIS. Whilst the English held it, it formed the county of Guines; after their expulsion in 1558 it was often called *Le Pays Reconquis*, or the reconquered country.

CALAMINE. [ZINC.]

CALAMINTHA, a genus of plants belonging to the natural order Lamiaceæ. There are four species of this genus, common and well-known

plants in Great Britain:—*C. Nepeta*, Lesser Calamint, Cat-Mint, Balm, or Field-Balm; *C. officinalis*, Mountain Balm, Common Calamint (*Thymus Calamintha*, Smith; *Melissa Calamintha*, Bentham); *C. acinos*, Basil Balm, or Basil Thyme (*Acinos vulgaris*, Persoon; *Acinos thymoides*, Mönch); and *C. Clinopodium*, Wild Basil, Bed-foot (*Clinopodium vulgare*, Smith). They all contain a volatile oil, which has sometimes led to their use in medicine.

CALAMIS, a very celebrated Greek sculptor, of the fifth century before Christ. Neither his native place nor the exact period of his career is known. He was however contemporary with Phidias, but probably his senior in years, as according to Cicero and Quintilian, who probably expressed the general opinion, notwithstanding the general excellence of his works, there was a hardness in his manner. He worked in various styles, in marble, in bronze, and ivory, and as an engraver in gold. He was also very famous for his horses, in which, Pliny says, he was without a rival. Many works by Calamis are mentioned in ancient writers, Greek and Latin. (Pliny, *Hist. Nat.* xxxiii. 12; xxxiv. 8; xxxvi. 4; Pausanias, i. 3; Lucian, *Imag.* 6, *Dial. Meretr.* iii.; Cicero, *Brutus*, 18.; Quintilian, *Inst. Orator.*, xii. 10; Strabo, vii. 491.)

CALAMITES, one of the most frequent and characteristic genera of fossil plants. It is found abundantly, but not exclusively, in the carboniferous system of strata, and generally in the sandstones and shales which alternate with coal. *Calamites Suckovii* occurs in most European and American coal-fields: *Calamites arenaceus* occurs in the bunter sandstein. We have found traces of a calamites in the red marl series of Worcestershire. [Coal-Plants.]

CALAMO'PORA, the generic title applied by Goldfuss to many Palæozoic corals, for some of which Lamarck employed the name of Favosites.

CA'LAMUS, the genus of palms whose different species constitute the rattan canes of commerce.

The species are principally found in the hotter parts of the East Indies, where they grow in the forests, climbing over trees and bushes to a greater extent than any other known plants. The stem of *Calamus verus* is described as being 100 feet long, that of *C. oblongus* 300 to 400, of *C. rudentum* upwards of 500, and of *C. extensus* as much as 600 feet; Rumphius even states that one kind attains the extraordinary length of 1200 feet (vol. v. 100). It is closely covered over by the tubular bases of the leaves, through which it is drawn by the cane-gatherers when green; afterwards it is dried in the sun, and then is ready for market. From three to four millions of these canes are imported into this country annually. They are extensively used for the sake of the hard flinty coating of their stems, which are readily split into strips, from which the bottoms of chairs and similar articles are manufactured. It is not possible to say from what particular species the canes of the shops are obtained, it being probable that many are gathered indiscriminately; *C. rotang* has however been said to furnish the stouter, and *C. scipionum* the slenderer sorts. The flesh that surrounds the seeds of this genus is a delicate article of food, and the young shoots of some of them, while still tender, are roasted or boiled, chopped small, and, being fried with pepper and gravy, are said to furnish a very delicate dish.

The greater part of the *Dragon's Blood* now met with in commerce is obtained from several species of this genus. The species which chiefly yield it are the *C. petræus* (Lour.), *C. rudentum* (Lour.) *C. verus* (Lour.) and *C. draco* (Willd.), of which the last three were by Linnæus reckoned mere varieties of the *C. rotang.* (Linn.) They are natives only of Hindustan, Cochin China, and the Moluccas. The ripe fruits are covered with a reddish-brown, dry, resinous substance. In this state they are collected, and allowed to remain till the resin drops off. The resin is afterwards melted, either by the natural warmth of the air or by artificial heat, and then moulded into the different forms in which it occurs in commerce.

Dragon's Blood possesses no astringent properties, as was once supposed to be the case, owing to kino being confounded with it. It is now seldom used internally, but it is added to tooth-powders. It is however employed as a colouring matter and an ingredient in varnishes.

Dragon's Blood was known to the Greeks, and by them called κιννάβαρις, *cinnabar*, a name which they also gave, as we now do, to a mineral, the red bisulphuret of mercury, or *minium*.

CALAMY, EDMUND, B.D., of Pembroke Hall, Cambridge, was born in London, in 1600. He entered the university at the age of fifteen, and was honourably distinguished for his scholarship. In 1626 he was appointed one of the lecturers of Bury St. Edmund's. For the ten years that he officiated in this capacity he ranked among the conformists. When at length Bishop Wren's Articles were published, and the order for reading the 'Book of Sports' began to be enforced, he publicly declared his objections to them, and left the diocese. Thirty other clergymen did the same. Soon afterwards he was presented to the valuable rectory of Rochford in Essex. In 1639, being chosen minister of the church of St. Mary, Aldermanbury, he removed to the metropolis, having separated from the church, and openly avowed his attachment to the Presbyterian discipline. His opinions against episcopacy were stated in a work, very popular in its day, entitled 'Smectymnus,' written in answer to Bishop Hall's 'Divine Right of Episcopacy.' As a preacher Mr. Calamy was greatly admired.

Like most of the Presbyterian clergy, he was averse to the execution of the king, and to the usurpation of Cromwell. He was among the foremost to encourage and promote the efforts that were made for the restoration of Charles II. On the king's return, he appointed Mr. Calamy one of his chaplains. His moderation was such, that he appeared only desirous of removing those restrictions which affected the Presbyterian clergy, accompanied with such reforms in the service of the church as would have allowed a conscientious performance of their pastoral duties. But finding the temper of the high church party set upon

their rejection by acts of further restraint and intolerance, he seized the opportunity of the passing of the Act of Uniformity to resign his living. Having, on one occasion after his resignation, been requested to preach, he introduced some matter into his sermon which touched upon recent events. This having been deemed seditious, he was committed to Newgate, where he lay, until the outery raised by his friends induced the king to order his liberation. He lived to see London in ashes; which event had such an effect upon his nerves, that he survived the melancholy spectacle little more than a month. He died October 29, 1666.

CALA'NDRA (Clairville), a genus of coleopterous insects belonging to the family *Curculionidæ*, or Weevils.

The common Corn-Weevil (*C. granaria*), which commits such havoc in our granaries, is well known. This little beetle bores a hole into the grain with its proboscis, and deposits there an egg. The egg turns to a grub, which devours the whole of the inside of the grain, leaving the husk entire; it then assumes the pupa state, and when the beetle is ready to emerge from its case it effects its liberty by breaking through the husk.

Rice is infested with another species (*C. orizæ*), and a large species (*C. palmarum*) lives during its larva state in the pith of the palms of South America. This grub is esteemed by the natives a great dainty.

CALA'NUS, an Indian philosopher of the sect called by the Greeks Gymnosophists, or naked philosophers. Alexander the Great, in the course of his Indian expedition, met with a body of these singular men. Calanus, one of them, consented to accompany Alexander in his expedition. On arriving at Pasárgada in Persia he fell ill, and insisted on being burnt. Alexander ordered a splendid pile to be raised, and a golden couch to be placed on it. Calanus was driven in a carriage to the spot, crowned after the Indian fashion; and, chanting hymns to the gods in the Indian tongue, he mounted the pile, and laid himself down in the sight of the whole army, and continued motionless amidst the flames. Calanus was in his 73rd year when he died. (Strabo, xv. 1; Arrian. *Anab.* vii.; Cic. *De Div.* i. 23; Valer. Max. i. 8.)

CALAPPA, a genus of crabs (brachyurous decapod crustaceans), separated by Fabricius, and well marked by the peculiarities of the shell and claws, with which last, as with a shield, the calappæ cover the mouth and anterior parts, at the same time contracting up their feet beneath the posterior vaults of the shell, under the hard protection of which their vulnerable parts are comparatively secured from the attacks of their enemies. They are called by the French *migranes*, and from their crested claws, *cogs-de-mer*, as well as *crabes honteux*, from appearing to hide their head and smaller limbs behind their large claws or chelæ. Their geographical distribution is wide, embracing the seas of the Indian Archipelago and of New Holland, the Pacific and Atlantic Oceans, the seas of South America, &c. We may notice, as an example of the genus, *Calappa granulata* from the Mediterranean. The proximate form is found in the genus *Œthra* of Leach.

CALATHI'DIUM, a modern name for the flower-head of the plants called Compositæ, the common calyx of Linnæus. It consists of a flattish or conical cellular disk, called the receptacle, upon which a number of small flowers are very compactly arranged; and its surface is either naked and even, except so far as the scars left by the attachment of the flowers render it otherwise, or covered with hairs, bristles, or scales, named paleæ. Its margin is uniformly furnished with one or more rows of small leaves or scales, which inclose the flowers as within a

CA'LATHUS (Bonelli), a genus of coleopterous insects of the section *Geodephaga*, and family *Harpalidæ*. Upwards of twenty species of this genus have been discovered, almost all of which are European. Their general colouring is black or brown; one or two metallic-coloured species, however, are known. In England eight species have been enumerated, most of which are common: four species may be found under stones and rubbish in the neighbourhood of London; of these *C. cisteloides* is exceedingly common, frequently being met with in pathways, &c.; it is about half an inch long, and of a black colour; the antennæ are pitchy black, with the basal joint red; the legs are black, and in some specimens red.

CALATRA'VA, on the south bank of the Guadiana, 21 miles from Toledo, known as the Oretum or Oria of the Romans, was, in the middle ages, a frontier fortress between Castile and the Moors of Andalusia. It is now reduced to a single tower, with the appellation of Calatrava la Vieja, to distinguish it from Calatrava la Nueva, which is 10 miles from it. In 1158, Sancho II. took Calatrava la Vieja, and gave it to the Templars, who, unable to prevent its reconquest by the Moors, returned it to the king. King Sancho then granted the place to the Cistercian abbot, Raymond, who, with his devoted monks, not only rescued Calatrava from danger, but began to make excursions against its assailants. Raymond, in the same year, 1158, founded the military order of Calatrava, under the rule of Saint Benedict, and united it to the Cistercian. The Knights of Calatrava at first wore the Cistercian habit, but they afterwards adopted a secular dress. In 1485 Ferdinand and Isabella united the grand-mastership of Calatrava to the crown. This order was distinguished by the title of 'the gallant order.'

CALCAIRE GROSSIER, the coarse calcareous building-stone of Paris, which, geologically speaking, is coeval with the blue clay of the basin of London, and contains many identical shells. These constitute the types of the Eocene tertiary series of Mr. Lyell.

CA'LCAR (Dejean), a genus of coleopterous insects of the section of *Heteromera*, and family *Tenebrionidæ*. This genus is distinguished from the allied genera (*Hypophlæus*, *Apis*, &c.) by having the body linear, the head emarginated anteriorly, and the three or four terminal joints of the antennæ nearly globular; the thorax is longer than broad, truncated anteriorly and posteriorly, and of nearly equal width throughout.

CALCAR, or spur, in flowers, is a hollow projection from the base of a petal, and has usually a conical figure. It was called nectary by Linnæus, but it rarely secretes honey.

CALCAREOUS SPAR, a name given to the rhombohedral crystals of carbonate of lime. If any crystal of calcspar, whatever its form, be carefully examined, an appearance indicating a tendency in its substance to break or split in the direction of three planes symmetrically related to the form may be perceived, and by a gentle blow the whole is readily reduced to fragments, each of which may, with a little care, be brought to the form of the rhombohedron, the faces of which are parallel to the three planes of cleavage above mentioned. Although this rhombohedron occurs rarely or never as an unbroken crystal of pure carbonate of lime, it is nevertheless the most convenient ground-form, to the axis of which the faces of all other crystals of this substance may be referred. The forms actually presented by this crystal, omitting the regular hexagonal prism, are mostly rhombohedrons and scalinohedrons, of which the varieties are exceedingly numerous, so numerous indeed that Bournou has devoted a work in three thick volumes to a description of them.

The specific gravity of the purest crystals of this mineral is 2·721; and the hardness is between gyps and fluor spar. It is of itself colourless, but frequently occurs of various tints of yellow, green, red, brown, and even black, from the admixture of impurities. Its glance is mostly vitreous. It is usually more or less translucent, and when transparent produces in a remarkable degree the double refraction of light: this property is best seen in the varieties obtained from Iceland, and hence known as Iceland-spar, and occurs as the ground-form, being in fact merely broken fragments of other larger crystals.

It would be useless to attempt to enumerate the localities where this crystal is found, it being a common ingredient of every mine. It is perhaps sufficient to state that the lead mines of Derbyshire and Cumberland, and of Andreasberg in the Harz, are noted as affording the most beautiful crystals, and the greatest diversity of forms.

CALCEDONY. [AGATE.]

CA'LCEOLA, an extinct genus of Brachiopoda, which occurs in the Palæozoic strata, and especially in the middle group. Calceola sandalina occurs in this position in South Devonshire.

CALCEOLA'RIA, a genus of very ornamental herbaceous or shrubby plants, belonging to the natural order *Scrophulariaceæ*. Its distinctive characters are principally that the flowers are diandrous, with a two-lipped corolla, the lower lip of which is much larger than the upper, and inflated so as to resemble a bag. All the species are South American, and are confined either to the western side of the Cordilleras, or to the southern extremity of the continent and its adjacent islands. In Chili and the mountainous parts of Peru, they are so common as to give a peculiar appearance to the vegetation. Some of them are lowlanders; others inhabit the highest parts of the Andes in the districts just below the regions of lichens and mosses; and thus, if both their wide geographical distribution and the various elevations at which they occur are taken into account, they are exposed to every kind of climate between those of England and Barbary.

The greater part of the genus has yellow flowers, a few have purple ones, and here and there in nature species occur with the two colours intermixed, by the addition of spots of purple to the yellow ground colour, the latter changing the former to a deep rich brown. By intermixing artificially the two colours natural to the genus, a production of hybrid varieties has resulted, and some crosses of extraordinary beauty have been obtained, especially from *C. integrifolia, corymbosa, arachnoidea, Chiloensis, crenatiflora, viscosissima*, &c.

The English mode of cultivation is to sow the seeds in the summer sufficiently early to produce by the month of December good stout plants fit for blooming the following year. These plants are to be placed in pots. As the roots appear at the hole in the bottom of the pots, the plants are to be successively shifted into larger pots, care being taken to disturb the roots as little as possible. A compost consisting of two parts of fully decomposed stable manure, one part of leaf or vegetable mould, and one part of fine white sand, or, in the absence of that, one part of sandy-peat, is the best for growing these plants.

CALCINATION. This term expresses the separation of the volatile from the more fixed parts of a body: thus bones which are heated till they become black are termed *burnt bones*; but when, by the further operation of heat, they become white, they are called *calcined bones*. But what were formerly termed metallic calces or calcined metals are now described as metallic oxides.

CAL'CIUM, a peculiar metal, of which *lime* is the well-known oxide. It was first obtained by Davy, in 1808, by the action of voltaic electricity, on a small mass of chalk. That calcium is a white combustible metal is nearly all that is known respecting it; but many of its compounds with other elements have been long known and extensively employed. Its atomic number is about 20·5.

Oxygen and Calcium combine to form two compounds, viz. lime, or the protoxide of calcium, and the peroxide of calcium. Lime has been known from the remotest antiquity, and is one of the most abundant and universally diffused substances in nature. It is never found pure, but always combined either with other earths, or with acids. If the carbonate of lime (limestone) be burned, the carbonic acid is expelled and pure or quick lime obtained. Pure lime consists of calcium 1, oxygen 1. It is white, opaque, inodorous, acrid, alkaline, and infusible. Its specific gravity is 2·3. If it be sprinkled with water, it heats, cracks, swells, becomes powdery, and forms *hydrate of lime*, or *slaked lime*, which consists of lime 1, water 1. A liquid solution of lime (13 grains to 1 pint of cold water) forms *lime-water*, which has a disagreeable taste, and the alkaline property of turning vegetable yellows brown and blues green. Lime is employed for a vast number of purposes

in common life, the arts, and manufactures. Among its most important applications are the making of mortar, and the amelioration of certain soils; it is extensively used also in soap-making, leather-dressing, dyeing, and for various medicinal purposes. The *Peroxide of Calcium* differs from lime in having an additional equivalent of oxygen, which it is very prone to yield up by decomposition.

Chlorine and Calcium combine to produce a chloride (formerly called muriate of lime) which is colourless, possesses a crystalline appearance when broken, is inodorous, very deliquescent, readily fusible, and has an extremely bitter saline taste. When heated, it shines in the dark, and was formerly called Homberg's Phosphorus. It is composed of calcium 1, chlorine 1. Its aqueous solution cools into crystals formed of chloride of calcium 1, water 7.

The *Bromide of Calcium* is a colourless, bitter, deliquescent substance which readily dissolves in water with the evolution of heat. It consists of calcium 1, bromine 1.

Sulphur and Calcium unite in three proportions. The *proto-sulphuret* is a reddish white compound, which is but slightly soluble in water, and suffers but little change even when long kept in it. This sulphuret shines in the dark, and has been called Canton's Phosphorus. It is composed of calcium 1, sulphur 1. The *bi-sulphuret* is a yellow crystal, composed of calcium 1, sulphur 2. The *per-sulphuret* is a liquid, composed of calcium 1, sulphur 5.

Phosphorus and Calcium constitute the phosphuret, which readily decomposes water and evolves phosphuretted hydrogen. *Selenium and Calcium* form a brownish black, tasteless, inodorous, insoluble substance, consisting of calcium 1, selenium 1. *Fluorine and Calcium* combine to form Fluor spar. [FLUOR SPAR.] *Cyanogen and Calcium* form a cyanuret, which exists only in solution.

Acids and Lime combine to form a numerous class of salts, of which the nitrate, carbonate, sulphate, and phosphate are the chief. *Nitrate of Lime* is a bitter colourless solution, readily crystallised into prismatic crystals. When decomposed by heat, the residue gives a feeble light in the dark, and has been called Baldwin's Phosphorus. Nitrate of lime is composed of nitric acid 1, lime 1.

Carbonate of Lime [CALCAREOUS SPAR] constitutes the greater part of all shells, and enters into the composition of bones. It is insoluble in water, but readily decomposed by most acids. It consists of carbonic acid 1, lime 1.

Sulphate of Lime (*gypsum, selenite, plaster of Paris*) is nearly tasteless; it requires nearly 462 times its weight of boiling water for solution. It is met with in most river and especially in spring waters, and is one of the salts which imparts to them the property called hardness. It consists of sulphuric acid 1, lime 1, water 2. The two atoms of water are with difficulty expelled. This salt is much employed in taking casts, and as manure.

Oxalate of Lime is a white extremely insoluble substance; it is dissolved by acids and decomposed at a high temperature.

Phosphoric Acid and Lime form several compounds, one of which occurs in nature. [APATITE.] Another is the *neutral phosphate*, a white insoluble powder, formed of phosphoric acid 1, lime 1. The *sesquiphosphate* is a white acid substance, consisting of acid 3, lime 2. The *biphosphate* is a sour crystalline body, composed of acid 2, lime 1. The *subphosphate* is a white insoluble powder consisting of acid 3, lime 4.

Chlorine and Lime form a most important compound, used to a great extent for the purposes of bleaching, and frequently called *bleaching powder*. In solution it is employed as a disinfectant.

CALCULATING MACHINES. Before computers had attained great proficiency in performing arithmetical operations by the pen, machines by which the results of such operations could be obtained by inspection were in almost constant use. The principal of these were the Roman abacus, which continued to be employed in the south of Europe till the end of the 15th century, and in England to a later period; and the Schwan-pan, which in China has long been the principal means of making computations. For the operations of multiplication and division the ivory rods of Napier, commonly called Napier's Bones, were for a time used; and, for solving trigonometrical problems, Gunter's Scale or the Logarithmic Scales were once very generally employed by navigators.

The celebrated Pascal constructed, it is said, when only 19 years of age, a machine for executing the ordinary operations of arithmetic. Subsequently to the time of Pascal, Leibnitz invented a machine by which arithmetical computations could be made; but no account of it appears to have been published.

All former contrivances for performing such operations may be said to have been cast in the shade by the machine invented by Mr. Babbage, which, should it be completed, will constitute one of the most superb monuments of human ingenuity. Not only are its operations accomplished with certainty, but the results may be transferred to copper-plates, from which any number of copies may be printed without a possibility of error. A very brief notice however of the manner of using it, and of the principles on which it is constructed, can be here given.

In any series of numbers arranged in line or column, if the difference between the first and second, between the second and third, and so on, be taken, there will be formed a line or column of what are called first differences: if the difference between the first and second, between the second and third, and so on, of these last numbers be taken, there will be formed a line or column of what are called second differences. Proceeding in like manner to form third, fourth, &c. orders of differences, there will at length be found a series of differences which are either constant, or to a great extent are nearly so. Then having any one of the numbers in the first column, and the numbers corresponding to it in the several columns of differences, all the succeeding numbers of the series may be found by mere additions or subtractions, and the latter process may be avoided by using arithmetical complements.

The machine accomplishes these additions by

the movements of a number of cylinders having on the convex surface of each the series of numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 0; and the operations are of two kinds: by the first, the additions are made; and, by the second, there is introduced the 1 which should be carried to the *ten's* place every time that the sum of two numbers is greater than 10.

Let it be imagined that there are, side by side, several vertical axles, on each of which are several cylinders one above another; and that these axles with their cylinders are capable of being turned by wheelwork, so that any one of the ten figures may be made to stand on the face of the machine, and immediately under a fixed index. Let it be further imagined that the figures composing a given number are under the indices in front of the cylinders on the first vertical axis towards the left hand; and the figures composing the several orders of differences in front of the cylinders on the other axes successively towards the right. Then, the general axle of the machine being, by a winch, turned one quarter of a revolution, only the first, third, fifth, &c. axles turn, and every cylinder on each of these axles turns, at the same time, through as many tenths of a revolution as are expressed by the figure in front of the cylinder immediately on its right hand.

There is thus brought to the front of each turning cylinder the unit's figure in the sum of the figure previously in front of that cylinder, and the figure in front of the cylinder on its right. When any of these sums exceed 10, a turn of the general axle through a second quarter revolution causes each of those cylinders, whose number should be increased by the 1 *carried* to describe one-tenth of a revolution, and thus the number in its front becomes greater by 1 than before.

Now, on turning the general axle through a third quarter revolution, the second, fourth, &c. axles only turn, and every cylinder on each turns at the same time through as many tenths of a revolution as are expressed by the figure in front of the cylinder immediately on its right hand; there is thus made, as before, an addition of the figure previously in front of the turning cylinder and the figure on its right. A turn of the general axle through a fourth quarter revolution performs, also as before, the operation of *carrying* where necessary; and now the cylinders on the first axle towards the left present to the front the figures constituting the number which, in the required series, follows the given number. The like operations are to be performed for all the succeeding numbers.

We have it not in our power to do more than give the following very general notion of the mechanism by which these remarkable movements are produced. Behind each column of the cylinders on whose convex surfaces are the nine numerals with zero is a vertical axle, carrying as many pairs of wheels, one above another, as there are cylinders. The upper wheel in each pair acts as a driving wheel to the cylinder, and has besides, on its circumference, teeth like those of an inverted crown wheel, and both wheels are capable of being connected with or disconnected from their common axle; the lower wheel carries on its upper surface an inclined plane, and between the two wheels is a bolt with two pins which project from it, one above and the other below. By the revolution of that wheel, the inclined plane is carried under the lower pin, and thus the upper pin is enabled to enter between two teeth in the crown wheel or to disengage itself from them. Another axle, in a vertical position behind the former, carries projecting bars which, when the axle is turned by the moving power, press upon the bolts and cause the pins to move up or down as above mentioned. This engagement and release of the inverted crown wheel are the means by which the cylinder is made to describe such part of a revolution as is required; and when the cylinder is to remain at rest while those on other axles turn round, an apparatus provided for the purpose removes out of its place the bar which should press against the end of the bolt. The process of *carrying* is accomplished by a bar on the axis of a cylinder, which at a proper time comes against the extremity of a claw; and this then engages itself between the teeth of a ratchet wheel connected with the next cylinder.

In order to transfer to copper-plates the results obtained from the machine, a curvilinear bar of metal is to act on an arm of a lever so as to raise it to ten different heights, corresponding to the ten figures on the surface of each cylinder, and the opposite arm of a lever is to move an arch carrying ten punches having on them in relief, the ten characters, 1, 2, 3, &c. to 0. A bent lever is to press the punch upon the copper-plate and produce the impressions of the figure.

Whatever be the cause that the construction of this superb machine is suspended, the circumstance cannot fail to be a subject of great regret. The portion which has been already executed is now in the library of King's College, London; and we are informed that it is capable of producing tables of the powers and roots of numbers not extending beyond eight places of figures.

(Taylor's *Scientific Memoirs*, vol. iii. art. 29.)

CA'LCULUS, CALCULATION. The word *calculus* means a small pebble, such as was made use of in teaching or practising *calculation*. We must refer to articles of a more specific kind for different methods of calculation, but as regards this individual word we have only to draw the distinction between it and *mathematics*. Generally speaking, a calculator is taken for a mathematician, which he may or may not be. Mathematicians are sometimes fond of and skilful in calculation, and sometimes the reverse of both: Euler and Wallis are instances of the former; Lagrange, according to report, of the latter.

The term *calculus* is commonly applied to signify any branch of mathematics which may involve or lead to calculation—any, in fact, except pure geometry. Thus the part of algebra which relates to exponents and logarithms is sometimes called the *exponential calculus*.

CAL'CULUS is the general term for inorganic concretions of various kinds, formed in various parts of the body, and bearing a general resemblance in shape or composition to stones. The particles of which they are composed are frequently

arranged by peculiar chemical affinities into regular forms; and in these, as in other crystals, the process may begin around a fragment of some other substance, such as a clot of blood, a pellet of mucus, or some foreign body, lying loose in the fluid which holds the elements of the calculus in solution. They are also formed by the mechanical aggregation about a nucleus, or otherwise, of particles of different kinds accidentally thrown together, and cemented into a mass by glutinous animal matter. Lastly, they may be the product of secretion, the more fluid part of the secreted matter being conveyed away or absorbed, while the sediment gradually thickens and hardens into consistence, adhering perhaps to some rough surface or projecting point, or being deposited in a hollow where the accumulation is least liable to be displaced by friction or washed away by the fresh influx of fluid.

The most familiar instance of the last-mentioned kind of concretion is that which is deposited from the saliva and mucus of the mouth between the teeth, and upon their outward surface, and which, though called tartar, consists of the phosphate and carbonate of lime. Similar deposits, of nearly the same materials, occur under the tongue or in the substance of the cheek in the ducts which convey the secretion of the salivary glands into the mouth. They sometimes attain a considerable size, and require an incision for their removal. Hard irregular masses of phosphate of lime, rarely larger than an almond, are also frequently met with in the lungs of consumptive patients. They are sometimes found imbedded in the pulmonary tissue, to which they adhere intimately; but more frequently in the middle of tubercular deposits, especially when these take place in the substance of the bronchial glands. Brittle earthy deposits, consisting chiefly of the phosphate of lime, are exceedingly common, especially in advanced life, in the arteries, and in the valves of the left side of the heart, the cavities of which contain arterial blood. They are frequently the cause of aneurism and other serious diseases. These concretions are not however so often productive of mischief as might be expected; for scarcely an individual passes the middle period of life in whom this ossification of the arteries, as it is termed, does not exist in a greater or less degree. The veins are likewise subject, but much less frequently, to small corpuscular concretions called *phlebolithes* (from φλὶψ, a vein, and λίθος, a stone). Calcareous deposits are also found occasionally imbedded in the muscles, on the surface of the spleen and pleura, in the brain, and other organs, and in various morbid growths of a cancerous, scrofulous, or fungous nature, as well as round foreign substances of any description retained in the body, and subject to the action of its fluids.

Gouty and rheumatic persons are subject to the deposition of a matter denominated *chalk-stones*, and resembling half-dried mortar, under the skin, about the joints chiefly of the fingers and toes. They frequently excite ulceration, and when they protrude externally may be removed; but an operation is rarely resorted to. They are found to consist of urate of soda.

The bowels are sometimes obstructed by rounded masses formed by the agglutination of dry fibrous particles, such for instance as the fine down or beard of the oat, which is not entirely removed by sifting the meal. These concretions usually form round a small piece of bone, a plum-stone, or other such body. They are smooth and compact in their structure, but of small specific gravity; the fibrous matter of which they consist occasionally alternates with concentric laminæ of phosphate of lime, which usually forms a layer upon their surface.

Calculi, denominated *gall-stones*, are frequently found in the gall-bladder. They are often numerous. They consist of one or more of the constituents of bile, with the occasional addition of phosphate of lime, and are white, or of shades intermediate between this colour, brownish yellow, and dark green. The white consist almost wholly of *cholestrine* (from χολὴ, bile, and στερεὸς, solid), a substance like spermaceti, first detected in the bile by Chevreul.

Urinary Calculi.—The urine is a very complex fluid [URINE] holding in solution several different ingredients which in certain conditions of the system are no longer kept in complete solution, but are precipitated or combined in a solid form, constituting various kinds of crystalline or sedimentary deposits often arranged in successive layers; thus inducing those well-known affections, gravel and stone in the bladder.

Renal Calculus and Gravel.—Urinary concretions for the most part originate in the pelvis or hollow part of the kidney, either as small stones or in the form of minute sand-like crystals. In this situation they are called renal calculi (from *ren*, the kidney). They may remain there permanently, but more commonly they are carried with the urine while yet of small size or in the form of sand into the ureter or duct of the kidney, along which it descends more or less slowly into the bladder with symptoms much resembling those which attend the passing of a gall-stone. These constitute what is called a fit of the gravel, and generally terminate in the expulsion of the offending matter with the urine.

Vesical Calculi.—It sometimes happens that a renal calculus, having reached the bladder in the manner described, is detained there, and becomes the nucleus of fresh concretions. Vesical calculus may also be formed upon a foreign body, such as the broken end of a catheter, or upon a small stone which has made its way inwards. In whatever way it may first arise, *vesical calculus* or *stone in the bladder* is one of the most dreadful maladies to which man is exposed. Even in its nascent state, but most certainly when it becomes at all large, the stone occasions excruciating pain.

There are remedies which are capable of affording a certain amount of relief for a time; but the only means that offer even a chance of a happier termination than death itself are the removal of the cause by an operation. The stone must either be withdrawn through the urethra by a properly constructed instrument, which often succeeds when it is small in the male, and seldom fails in the female unless it be large; or it must be drilled and crushed into fragments small enough to be voided

with the urine, according to an admirable method of operating brought into notice not long ago [LITHOTRITY], or an incision must be made large enough to permit its extraction [LITHOTOMY], a method practised by the ancients, and unfortunately by no means superseded (as some imagine) by lithotrity, which is out of the question in very young children, and often inapplicable in more advanced life. It is always advisable that an operation should not be delayed when the existence of stone is proved, for not only is the stone constantly increasing in size, but the parts concerned may become incurably diseased in consequence of delay, or the general health may sink beyond the power of restoration. The idea of dissolving the calculus is a dream.

In weight they vary from a few grains even to several pounds, but seldom exceed a few ounces. They have been distinguished (chiefly by the labours of Dr. Wollaston) into the following kinds, which are here arranged nearly in the order of their frequency:—1, uric acid; 2, oxalate of lime, called also the *mulberry* calculus, from its dark colour and rough surface; 3, ammoniaco-magnesian phosphate, called also the triple phosphate; 4, phosphate of lime, or bone-earth calculus; 5, the fusible calculus, a combination of the last two species, so called from its fusibility under the blow-pipe; 6, the mixed calculus, composed of several of the other kinds confusedly mixed; 7, urate of ammonia; 8, carbonate of lime; 9, cystic oxide; 10, xanthic oxide. The last three are extremely rare.

Calculi are also found in inferior animals. *Biliary calculi* are rare in the horse and the deer, for these animals have no gall-bladder, and the hepatic duct is large and straight, and the bile flows through it as fast as it is secreted. They are often found in the gall-bladder of the ox, sheep, and dog. They have also been observed in the gall-bladder of almost every domestic quadruped, and very often in poultry. They differ materially in their composition, but agree in being crystallised bodies, formed of layer upon layer, and containing margaritic acid, animal mucus, a yellow colouring matter, and salts, principally phosphate of lime and magnesia. *Cerebral calculi* have been found more frequently in the horse than in any other quadruped. *Gastric calculi* are of frequent occurrence in ruminants. Concretions varying from the weight of a few ounces to seven or eight pounds have been found in the paunch of cattle. There are traces of concentric layers in all of them, but they are far from being regular. There is usually some central nucleus, such as a small bit of nail or stone, around which has been collected a mass of earth, and food, and hair, cemented by the mucus of the stomach. A different kind of concretion is found in the abomasum or fourth stomach of cattle, and particularly of calves. It is composed almost entirely of hair, agglutinated by the mucus of the stomach. Cattle are frequently observed to spend a considerable time in the friendly office of licking each other: a portion of the hair mixed with the saliva is occasionally swallowed; and, not possessing sufficient solidity or weight to break through the roof of the paunch and enter that stomach, it passes along the œsophagean canal to the fourth stomach, where, by the peristaltic motion of that stomach, it is formed into a ball. The animals in which these hair-balls are found after death were never well conditioned or healthy, and those that have expelled a hair-ball by stool have immediately begun to thrive.

Similar balls, but composed of felted wool, with other matters, are found in the fourth stomach of the sheep, the goat, the chamois, the antelope, and the deer. [BEZOARS.]

Intestinal Calculi are often found in the horse; but the symptoms of their existence are obscure, and can scarcely be distinguished from those of colic. They destroy the horse by the irritation which they occasion, and by their weight, and, especially in the concussion of rapid action, they rupture the parietes of the intestine.

Salivary calculi are oftener found in the herbivorous animal than in the human being, because there is a greater expenditure of saliva in mastication, and the salivary glands are larger and more susceptible of inflammation. They mostly exist in the parotid duct.

Urinary calculi, whether found in the kidneys, or ureters, or bladder, or urethra, have been observed in almost every domesticated animal. In the horse, a urinary calculus has occupied the whole cavity of the kidney and has weighed more than a pound. It has obstructed the ureters, and destroyed the horse and the ox. The operation of lithotomy has been performed with success on almost every domesticated quadruped, and that of lithotrity has been effectual in the horse.

CALCUTTA, the capital city of the presidency and province of Bengal, in Hindustan, and the seat of the supreme government of Great Britain in the East Indies, is situated on the eastern bank of the Hoogly River, or great western branch of the Ganges, in 22° 35′ N. lat., 88° 30′ E. long., about 100 miles from the sea, by the course of the river.

The city extends about 4½ miles along the bank of the river, including Fort William and the Esplanade which surrounds it, and from a mile to a mile and a half from the river eastward. The river, at high water, is about a mile wide, but at low water a long range of sandbanks are laid bare on the side opposite to Calcutta. A quay called the Strand extends along the bank of the river from north to south all the way as far as the Esplanade. The quay is 40 feet above low-water mark, and has many broad flights of steps which lead down to the water, which are useful both for the landing of goods and to enable the natives to perform their ablutions.

The Esplanade is a large space which incloses Fort William on the north, south, and east, and separates it from the city. Facing the Esplanade on the north is the Government House, which was built by the Marquis Wellesley, a magnificent structure, with a circular centre supported by columns of marble, and crowned by a dome, and with four wings. A short distance north from the Government House is Tank Square, each side of which is 500 yards, and in the centre is a large tank 60 feet deep. The principal public build-

ings, besides the Government House, are—the town-hall, the courts of justice, the Mint, the Bank of Bengal, the Union Bank, St. John's Cathedral, and a great number of other churches and chapels, Hindoo pagodas, and Mohammedan mosques. The houses in which Europeans reside are mostly detached, built with brick, and stuccoed. The quarter in which the natives principally reside is to the north, and consists of narrow, dirty, unpaved streets. There are a few brick houses of two stories, with flat-terraced roofs, in this part, which is called the Black Town, but most of the dwellings are mud hovels, covered with small tiles, the walls frequently consisting of mats and bamboos. In this quarter the population is very dense.

Fort William is about half a mile south from the Government House. It is a strong and regular fortification more than half a mile in diameter from angle to angle of the bastions.

The population has been generally estimated at 600,000 to 700,000, but this was a great exaggeration. A census taken in 1837 made the population of the city, properly so called, amount to 229,700, of whom the British were only 3138. The Portuguese were 3511. The Eurasians (the progeny of a white father and a native woman) were 4746. The Hindoos were 137,651; the Mohammedans 58,764; and the Low Castes 19,084. The remainder were French, Jews, and others. A great part however of what may be fairly considered the population of Calcutta, consisting of labourers, mechanics, and persons engaged in trade, reside at night in the suburbs and neighbouring villages, and come into town early in the morning to their respective employments. These were estimated in 1837 at 177,000, which added to the former would make the entire population amount to 406,700.

Calcutta is the seat of the supreme court of judicature for the presidency of Bengal. In 1814 a bishop's see was first established in India, with the title of Bishop of Calcutta: the bishop has a residence in the city, and a salary of 5000*l.* a year. There are several educational establishments, some of which are supported by the government, in the native languages as well as in English, and there are also several literary and scientific institutions.

Calcutta possesses great advantages for inland navigation. All kinds of foreign produce are transported on the Ganges and its affluents with great facility to the north-western parts of Hindustan over a distance of at least 1000 miles, while the productions of the interior are received at Calcutta by the same channel. An agreement has recently (Jan. 1848) been entered into for the construction of a railroad from Calcutta to Delhi, a distance of more than 1000 miles, of which so much as can be construeted for 3,000,000*l.* is to be proceeded with forthwith.

The chief articles of export from Calcutta are indigo, opium, sugar, raw silk, and silk piece-goods, salt-petre, rice, hides, cotton, and cotton piece-goods. In 1841-2 the exports amounted to 8,394,059*l.*

The chief articles of import into Calcutta are, British cotton manufactures and cotton twist, bullion, copper, tin, lead, zinc, iron, and other metals; woollens, wines and spirits; hardware and cutlery; jewellery, watches, &c.; coffee, tea, books and stationery. In 1841-2 the imports amounted to 5,426,672*l.*

The net amount of customs duty received at Calcutta in 1843-4 was 558,987*l.*, In 1845-6 it was 847,815*l.*

The present system of communication between London and Calcutta by steam-vessels was established in 1845. A mail parcel is despatched from London to Southampton on the 20th of every month. On the following day a steam-vessel starts with a parcel from Southampton and reaches Malta in about ten days, where another mail-parcel, made up on the 24th, and despatched overland through France, has arrived in time to be conveyed with the other mail-parcel to Alexandria. Thence the mails are conveyed overland to Suez, then by steam-vessel to Ceylon, where the mails are divided. One is conveyed to Madras and Calcutta, and the other to Singapore and Hong-Kong.

In 1698 the English factory was removed from Hoogly to the present situation of Calcutta, then the small village of Govindpoor. In 1756 the place was taken by Suraja ud Dowlah, Soubahdar or viceroy of Bengal, but it was retaken at the beginning of the following year by a squadron of five ships of war, sent out from England with 2400 troops under Colonel Clive.

(M'Culloch's *Commercial Dictionary*; *Parliamentary Papers.*)

CALDA'RA. [CARAVAGGIO.]

CALDER, River. [YORKSHIRE.]

CALDERA'RI, OTTO'NE, a nobleman of Vicenza (where he was born in 1730), to whom that city is indebted for many important additions to its previous architectural attractions. In fact, he is fairly entitled to be called the Palladio of the eighteenth century. His enthusiasm for architecture is said to have been first excited by viewing the Basilica of Vicenza by moonlight, which made so powerful an impression upon him that he henceforth devoted himself to the study, and became, like Burlington, more than a mere 'dabbling amateur' in it, since his renown eclipsed that of many of his professional contemporaries. One of his earliest recorded works was the casino erected by him near Vicenza, in 1772. In 1773 he built the small Palazza Bonini at Vicenza. The Palazzo Cordellina (1776) at Vicenza is esteemed his greatest work. Nor was Vicenza alone the scene of his architectural labours, for he designed the beautiful atrium of the Seminario at Verona, and the Villa Capra at Marano, and the Casa Cocastelli in the Mantuan territory. Count Calderari died at Vicenza, October 26, 1803.

CALDERON DE LA BARCA, DON PEDRO, was born of noble parents at Madrid, in 1601. He is one of the greatest of the Spanish dramatic writers. He wrote about 500 pieces, some of which are 'Comedias de Capa y Espada,' or plays of the cloak and sword, so called from the dress of the chief characters; 'Comedias

Heroicas,' which are a sort of historical dramas; and 'Autos Sacramentales,' which are dramas founded on religious subjects.

Calderon's talents, which had been early manifested at school under the Jesuits, developed at Salamanca, and already admired in the Spanish possessions of Italy and the Low Countries, were at last encouraged by the patronage of Philip IV., who bestowed on Calderon a knighthood of Santiago in 1636, invited him to Madrid in 1640 to write the 'Certamen de Amor y Zelos' (the Contest between Love and Jealousy), a sort of festival to be performed on the lake of Buen-Retiro, and soon raised his allowance to an escudo more per day. At the age of 50 Calderon entered the church, and two years afterwards the king bestowed on him a chaplaincy of Toledo. In 1663 he gave him another similar piece of preferment, with a handsome pension charged on the revenue of Sicily, and other similar acknowledgments of his services and merits. During the long period of thirty-seven years he wrote, by special commission of the municipality of Madrid, and of other cities, such as Toledo, Sevilla, and Granada, about 100 'Autos Sacramentales,' or sacred pieces, which resemble those of the 16th century, commonly called 'Mysteries.' Some of the Autos of Calderon, especially that entitled 'La Devocion de la Cruz' (the Devotion of the Cross, meaning its miracles), are the best productions of the kind. He wrote also a discourse on painting, 'La Nobleza de la Pintura;' a 'Defensa de la Comedia;' and many songs, sonnets, and ballads, with numerous short poems.

The date of Calderon's death is variously stated, but that of May 25, 1681, appears to be the most correct. The greater part of Calderon's works were published at Madrid in 9 vols. 4to. 1689; the first three volumes contain his comedies, and the six last a great number of his Autos Sacramentales. They were reprinted at Madrid in 1726 and 1760 in 10 vols. 4to. A collection of his Autos appeared also at Madrid in 1759 in 6 vols. 4to.

CALEDO'NIA, the name given by Tacitus and other ancient writers to the most northern part of Britain north of the æstuaries of Glota and Bodotria (the Clyde and the Forth), which formed the permanent boundaries of the Roman province. Tacitus calls the natives the 'Britons who inhabit Caledonia,' and he says that the reddish colour of their hair, and their large limbs, denoted them to be of German extraction. ('Agricola,' 11, 25.) Agricola was the first Roman general who came in contact with the Caledonians. [AGRICOLA; BRITANNIA.] The name of Caledonia has been often applied to Scotland in general, though improperly.

CALEDONIA, NEW. [NEW CALEDONIA.]

CALEDONITE occurs crystallised. Colour blue and greenish blue. Hardness 2.5 to 3.0. Transparent. Specific gravity 6.4. Found at lead Hills in Scotland. Analysis:—Carbonate of lead, 32.8; carbonate of copper, 11.4; sulphate of lead, 55.8.

CALENBERG, a principality in the centre of the kingdom of Hanover. It is a fertile tract, produces much grain, flax, hemp, &c., is well wooded in the western districts, and is watered by the Leine and Weser. Its area is about 1062 square miles. It contains twelve towns, among which are—HANOVER, the capital of the kingdom: Hameln, on the Weser, which was formerly an important fortress; it has 6100 inhabitants, a cathedral, a large house of correction, several breweries and distilleries: and Eldagzen, population 2200. The population of Calenberg is 186,000.

CALENDAR. [KALENDAR.]

CALENDERING is a general name applied to the processes of smoothing, dressing, and glazing webs or textile fabrics of cotton and linen, either to prepare them for the operations of the calico-printer, or to impart the last finish to the goods before they are folded and packed for the market. The earlier calenders, or calendering machines, closely resembled a common mangle in their action, but were very large and heavy, and worked by a horse-wheel, or other sufficient power; but the process was greatly improved by the invention of a machine in which the pressure is produced between cylinders, instead of between cylinders and flat surfaces, and in which, consequently, the alternating motion is got rid of, and, also, it is easier to give a uniform and equal pressure. The rollers or cylinders were formerly made of wood; they are now usually made either of paper or of cast-iron. The paper cylinders are formed by packing a great number of circular pieces of stout pasteboard upon an iron axis, and compressing them very slightly by means of iron bolts passed through them, acting upon circular end-plates of cast-iron. The surface is brought to a perfectly even and polished state by turning in a lathe. Iron rollers are made hollow, and, when necessary, heated from the inside. Where a glazed or polished surface is required on the goods to be calendered, mechanism is employed to cause two adjacent rollers to revolve with different velocities, so as to produce a rubbing action.

CALENDS, or KALENDS. [KALENDAR.]

CALE'NDULA, a genus of plants belonging to the natural order *Compositæ*. *C. arvensis*, Field Marigold, is common on the continent of Europe, and is found in immense numbers in some of the vineyards of the Rhine. *C. officinalis*, common Marigold, is the *Souci du Jardin* of the French, *Gold-Blume* of the Germans, and *Fiorancio* of the Italians. Although common enough now in the gardens of Great Britain, and frequently found wild, it is not a native of these islands, but has been introduced from the south of Europe. This plant is a great favourite in gardens, and continues to blossom till the approach of winter.

CALEPI'NO, AMBRO'GIO, born at Calepio, in the province of Bergamo, was an Austin friar, and wrote a Latin dictionary, which was first published at Reggio, fol. 1502. He died in 1510, at a very great age.

CALF. The rearing and fattening of calves is an important part of rural economy. In dairy districts the milk is so valuable, that they are got rid of as early as possible, and are purchased by the calf-dealers, who fatten them and prepare

them for sale to the butcher. It often happens that the poor animals, packed on their sides in a cart, with their heads hanging down, remain a considerable time without food. Were they now allowed to satisfy their craving, a violent diarrhœa would ensue, and probably terminate in death. The best plan is to give them a little boiled milk at first, increasing it by degrees, and mixing starch, arrow-root, or a raw egg beat up in it, till the tone of the stomach is restored. Air, cleanliness, and repose between the meals, whether the calf is fed by hand or sucks the cow, will generally cause it to thrive. The calf-pens should not have too much light; they should be made each for a single calf only, and so narrow that it cannot turn about and lick itself, a bad habit which calves are apt to contract. The bottom should be paved with brick, or boarded, for the sake of cleanliness. A lump of chalk is often placed in a trough for the calf to lick; it corrects acidity, and thus tends to promote health, but does not, as some suppose, make the flesh whiter. At five or six weeks old, a little sweet hay, tied in a bundle and hung up so that the animal can reach it, will induce it to pick a little, and prepare the stomach for an increase of vegetable aliment. Calves should be fat by eight or nine weeks old; it is seldom advisable to keep them above twelve weeks, as they then consume a greater quantity of milk than can be afforded. In some countries calves are killed when only a few days old; the flesh is then soft and tasteless. In France and Switzerland no calf is allowed to be killed for sale under the age of ten days. Calves intended to be reared for grazing or the dairy should be allowed to suck the mother for three or four days, then brought up by the pail, and gradually educted from their milk diet to one of a vegetable nature. Boiled carrots and turnips, with cut hay, form a good food by way of introduction to their new diet. Calves are subject to two diseases in particular, namely, *diarrhœa* and *constipation*. The treatment of the first is by chalk, opium, and gentle cordials; of the latter, by doses of castor oil, with a little ginger. (For the Treatment and Diseases of Calves, see Knight's *Farmers' Library*, art. 'Ox,' p. 173, &c.)

CALIBRE, CALIPER, or CALLIPER. The first of these words is French, and was a technical term signifying the internal diameter or *bore* of any piece of ordnance. In England it has come to signify generally the diameter of any round substance. Caliper compasses, or callipers, are compasses intended to measure the calibre or diameter of round bodies, and are formed with curved legs.

CALICO. [Cotton.]

CALICUT, a seaport town in the province of Malabar, in Hindustan, in 11° 15′ N. lat., and 75° 50′ E. long. Calicut was the first Indian port visited by Vasco de Gama in 1498. In 1766 the town was taken by Hyder Ali, when he enlarged the fort. His son Tippoo afterwards destroyed both the fort and the town, and removed the inhabitants to Nelluru, the name of which place he changed to Furruckabad. When the province of Malabar was conquered by the English in 1790, the former inhabitants of Calicut returned to their old abode. Before its destruction by Tippoo the town contained between 6000 and 7000 houses. In 1800 Calicut again contained more than 5000 houses. The inhabitants are mostly of Arab descent and profess Mohammedanism. The manufacture of cotton goods was formerly carried on here to a great extent, and furnished a considerable supply to Europe; but those goods are now mostly imported. The exports consist principally of cocoa-nuts, betel-nuts, pepper, ginger, turmeric, teak-wood, sandal-wood, cardamoms, and wax. (Dr. Hamilton (Buchanan's) *Journey through Mysore, Canara, and Malabar.*)

CÂLIDÂSA is the name of one of the most admired Indian poets. Several considerations, especially the highly polished style of his works, favour the assumption that the poet lived under Vicramâditya II., who began to reign A.D. 441. The Nalôdaya, a Sanscrit poem on the subject of the story of Nala and Damayanti, from the Mahâbhârata, written in an exceedingly forced and artificial style, to which the name of Câlidâsa is affixed, should probably be attributed to the Câlidâsa, who lived at the court of Râjâ Bhôja, sovereign of Dhârâ, in the tenth century of our æra.

Câlidâsa is the most universal, the least constrained by national peculiarities, not merely of all Indian, but of all Asiatic poets with whose works we are acquainted; and to this elevated tone of his mind, which while seeming to breathe the purely human air of Greece yet retains all the quickness and glow of feeling, all the vividness of description and imagery of the Hindoo, must be mainly attributed the undivided admiration with which the translation of his drama, Sacuntalâ, by Sir William Jones (the first work that made known the name of Câlidâsa to Europeans), has been received. This translation appeared at Calcutta in 1789, and was soon reprinted in England. In 1830 the Sanscrit text of 'Sacuntalâ' was published at Paris from a MS. belonging to the 'Bibliothèque du Roi' by the late Professor A. L. Chézy, with an original French translation; and upon this edition is founded a new translation into German by M. Hirzel, Zürich, 1833, 8vo. But Sir William Jones's translation and Chézy's edition exhibit the work of Câlidâsa according to the interpolated shape in which it is now current in Bengal. This discovery was made by M. Hermann Brockhaus, of Leipzig, who, in 1835, collated the numerous MSS. of the drama in the library of the East India Company, and in the collection of Professor H. H. Wilson.

Besides 'Sacuntalâ' we possess two other dramatic poems attributed to Câlidâsa, Vicramôrvasî, translated by H. H. Wilson, in his Hindoo Theatre; and Dhûrtasamâgama, a burlesque piece, as yet inedited. The Mêgha-dûta, or 'Cloud-messenger,' a lyrical poem of 116 stanzas, was edited, with a translation into English verse and with notes, by H. H. Wilson, Calcutta, 1813, 4to. The 'Raghu Vansa,' a narrative poem, has been edited, with a Latin translation, by Stenzler,

London, 1832, 4to. and with a Sanscrit prose paraphrase by the pundits of Fort William, at Calcutta, 1832, 8vo. There are some few other works by Câlidâsa.

CALIFORNIA is situated on the shores of the Pacific Ocean, between Oregon and Mexico. It consists of two parts, Lower California, a peninsula, divided from the main land by the Gulf of California, and Upper California, which comprehends the whole coast from the north end of the Gulf of California to Oregon.

Lower California is almost wholly a high bare rocky district, with many ravines, but few flat or cultivable spots. The flat ground near the sea is sandy and sterile; and the climate is hot and dry. The vegetation of the province is scanty, and the variety of trees is but small: a few produce bark for tanning; others leaves for cattle fodder; and others fruit. A few corn plants and other vegetables are reared, but not sufficient for the consumption of the inhabitants. Cattle, horses, mules, and hogs, are numerous. Among wild animals, wolves, foxes, deer, goats, squirrels, snakes, lizards, and scorpions abound. Scarcely any mineral riches are known in the country, except one inconsiderable gold mine, near La Paz.

Though Lower California was discovered by Hernando de Grixalva in 1534, no settlement was formed by the Spaniards before 1698, when the Jesuits established themselves here, and began to collect the wandering Indians into their missions, and to convert them. But the population was of course very scanty, and so it is still. The Indians belong to several tribes, speak different languages, and go nearly naked.

Loreto is considered the capital of Lower California. It stands in a valley about 2000 or 3000 feet wide, and surrounded by wild and sterile mountains. The valley contains only this town, which is small. La Paz is another town farther to the south, larger and more populous than Loreto. Near it is the harbour of Pichiluigo.

Upper California, in its western districts, in some degrees resembles Lower California. Although the country is vaguely said to extend 800 miles from N. to S., and nearly as much from E. to W., yet its boundaries are uncertain, and much of its surface unknown to Europeans. There is a strip of sandy desert, from 100 to 200 miles wide, next to the sea; then a mountain range; and then the valley of the river Colorado. The mountain range joins at one part to the Rocky Mountains. Two parallel ridges include between them the valley of the Tule Lakes. These two lakes, after the rainy season, extend together nearly one hundred miles in length; they discharge their water into the Bay of S. Francisco.

The only settled part lies along the coast, where the missions were nearly all within one day's journey from it. The settlements were generally not extensive, most of the valleys being narrow, and the mountains which inclose them too steep to be cultivated, though they supply pasture for a considerable part of the year. The most extensive valley is that of S. Gabriel, which is above 30 miles long. The best portion is the region about the Bay of S. Francisco, which the rivers S. Joaquin, Jesus Maria, and Sacramento, enter. The climate is much colder and more rainy than that of Lower California; but still it is warmer and drier than the eastern part of America in the same latitude.

The surface of Upper California being mostly covered with rocky mountains contains a very small portion of arable land, but where the soil is arable it is usually rich. The chief objects of culture are wheat, maize, vines, fruits, and table vegetables. Black cattle and sheep are largely reared: mules and horses are less numerous. Very little mineral wealth has been met with.

Humboldt estimated the population of the missions of Upper California, according to official documents, at 15,600, at the end of the last century; but it was found in 1842 that the two Californias together contained only 33,439, excluding of course roving Indians. Nearly twenty languages are spoken along the coast. In the internal government of the province, each mission contained a church, dwelling-houses for two or three monks, some public buildings for the preservation of agricultural produce, utensils and tools, and the houses of the converted Indians. There were separate houses for the unmarried females, and pueblos (villages) for invalid soldiers. Four military establishments were kept up for the protection of the missions.

The chief places are—S. Diego, with a good but not deep harbour, whence large quanties of tallow and salted hides are exported; Monterey, the seat of the governor of Upper California, on a large bay, having good anchorage; and San Francisco, on the bay of San Francisco, which is very spacious, and from N.E. to S.W. extends upwards of sixty miles, with an average breadth of about twenty.

The Jesuit missions no longer exist. In 1836, one of those revolutions to which Mexico has been so subject led to the disorganisation of the Californian mission and the dispersion of the Jesuits. This has been a calamity for the country. Each mission formed a little colony of Indians, who were brought into an industrial community by the exertions of their priests. But now all is confusion: the priests are dispersed; the Indians are dispersed; and the province is misgoverned by officers sent from Mexico. Captain Wilkes, Captain Fremont, and Sir George Simpson, who have recently visited the country, all concur in opinion, that California, or at least the Upper province, will ere long be united with Oregon, and be governed by the Anglo-Saxon race. The present contest (1848) between Mexico and the United States may possibly hasten such an event. The barren waste which separates Upper California from Mexico renders the former more nearly allied to Oregon than to Mexico.

(Wilkes, *United States Exploring Expedition*; Fremont, *Overland Journey to Oregon*; Sir G. Simpson, *Journey round the World*.)

CALIFORNIA, GULF OF, which was first visited by Hernando de Grixalva in 1534, extends along the W. coast of America, between the main land and the peninsula of California, beginning on the S. between Cape Palmo in California (about 23° 10′ N. lat.) and the port of Mazatlan on the main

land (about 23° 30'), and extending N.W. to the mouth of the Rio Colorado (32° N. lat.). Its length is above 700 miles, and its breadth varies between 150 and 40 miles. The western shores are in general rocky and high; the eastern, low and sandy. The pearl-fishery was once largely carried on; but it is now very small. The spermaceti whale, the shark, the seal, the tortoise, the turtle, and many edible fish are met with in the Gulf. A few native and foreign vessels navigate the Gulf.

CALI'GULA, CAIUS CÆSAR, the third of the Roman emperors, son of Germanicus and Agrippina, was born A.D. 12, at Antium. He was brought up among the soldiers, and is best known by a name said to have been given him by these associates. The word *Caligula* is derived from *cáliga*, a kind of shoe, which was worn by the common soldiers, and which he frequently wore himself in order to gain their affections. (Tacit., 'Ann.' i. 41, 69.) His education appears to have been neglected. Caligula devoted himself to courting the favour of Tiberius, and by artful attentions he so far succeeded that he was soon promoted to high offices of state. The uncertainty of succession which followed the death of Tiberius, together with the general popularity of Caligula, afforded him a favourable opportunity of succeeding to the sovereign power (A.D. 37.) His government began well: he set at liberty all the state-prisoners, discouraged informers, and promised the senate that he would act with the utmost moderation. In A.D. 37 he assumed the consulship, and took for his colleague his uncle Claudius. During his consulship Caligula gave many instances of mildness and generosity. His conduct, however, was soon changed. Caligula became addicted to intemperance and cruelty, and his extravagance knew no bounds. He even had temples erected and sacrifices offered to him as a god. He made great preparations for a war against the Germans, and crossed the Rhine with a large army, but returned without having seen a single enemy. He entered and plundered Gaul (A.D. 40), banished his sisters Agrippina and Livia, pretended that he was going to invade Britain, but returned after he had got a few miles out to sea from the coast of Gaul, and on his return to Rome contented himself with an ovation.

After a reign of three years, ten months, and eight days, and in the 29th year of his age, this madman was murdered by a band of conspirators, headed by Cassius Chærea, a tribune, A.D. 41. (Sueton. 'Calig.,' c. 69.) Caligula had several wives, but he left no children behind him. He was succeeded by his uncle Claudius.

CALI'GUS, a genus of Pœcilopodous Crustacea (family *Siphonostoma*), first separated by Müller, and afterwards restricted by Leach. (Cuvier's 'Règne Animal,' vol. iv. p. 197.)

The animals of this genus are small parasites, which fix themselves upon fishes, and are known among fishermen as Fish-Lice. One species, *Caligus Mülleri*, is very common on the cod, *Morrhua vulgaris*. In these small parasitic crustaceans the body is depressed, having its exterior portion covered by a membranous shell in the form of a shield narrowed posteriorly; abdomen narrower, elongated, oval, or nearly square, and terminated by two elongated processes. Two conical antennæ are situated on the anterior border of the head; at the internal base of these are placed two distant eyes. Beneath the head there is an obtuse beak; anterior feet furnished with prehensile hooks by which the parasite adheres to the slippery fish. The abdominal appendages are most probably subservient to respiration. This is the opinion of Müller, Jurine, Cuvier, and others.

CA'LIPH, CA'LIPHAT. Caliph, properly *Khalífah*, is an Arabic word which primarily denotes a deputy lieutenant, or vicegerent, but is generally used in a more limited sense, as the title of certain dynasties of Mohammedan sovereigns, regarded as the successors and representatives of the Arabian prophet Mohammed. It was first adopted by Abu Bekr, the immediate successor of Mohammed, and, together with *Emîr-al-Múmenín*, 'the commander of the faithful,' continued for several centuries to be the title of the principal line of Mohammedan sovereigns. The word Caliphat (Arabic *Khiláfat*) is used both as a general designation of the line of sovereigns called caliphs, and, in a geographical sense, for the extent of countries subject to their dominion.

The two chief personal prerogatives of the caliphat (and of sovereignty in Mohammedan countries generally) are, the right of the caliph to have his name struck on the coinage of the empire, and to have it mentioned every Friday in the public prayers by the Khâtibs, or preachers, throughout the country. In the history of Mohammedan Asia we find considerable importance attached to these two inalienable concomitants of sovereignty: they are the tacit expression of the public recognition of a new sovereign on his accession to the throne, as well as the sign of open rebellion on the part of a usurper, if either party has his name proclaimed from the pulpits in the mosques, or inscribed on the coinage of the realm.

(Joseph von Hammer, *Die Länderverwaltung unter dem Chalifate*, Berlin, 1835, 8vo.)

CALIPPUS, CALIPPIC PERIOD. Calippus, of Cyzicus, lived about 330 years B.C. He is said to have been a disciple of Plato. He observed at the Hellespont, and is said to have detected the error of the Metonic cycle by means of a lunar eclipse which happened six years before the death of Alexander.

The cycle of Meton was composed of 235 lunations, or periods from new moon to new moon, containing a few hours more than 19 years.

Calippus observed that a more correct period might be formed by taking four times the period of Meton, all but one day, or 27,759 days, or very nearly 76 years. The Calippic cycle is therefore four Metonic cycles, all but one day. Calippus began to reckon his cycles from the new moon next following the summer solstice of the year B.C. 330, being the commencement of the 3rd year of the 112th Olympiad, A.U.C. 423.

CALIXTUS I., or KALLISTUS I., one of the early bishops of Rome, succeeded Zephyrinus A.D. 219, and died in 223.

CALIXTUS II. succeeded in the see of Rome Gelasius II. in 1119, and died in 1124.

CALIXTUS III., Alonso Borja, a Spaniard and bishop of Valencia, was made pope after the death of Nicholas V. in 1455. He died in 1458. [POPES.]

There was another Calixtus, an antipope, who assumed the title of Calixtus III. in the schism against Pope Alexander III. in the twelfth century, but afterwards submitted and resigned his claim.

CALLA. [RICHARDIA.]

CALLAN. [KILKENNY.]

CALLAO, a small seaport town in Peru, in 12° 4′ S. lat., 77° 4′ W. long. The bay is formed by the island of San Lorenzo, which protects it on the west from the swell of the ocean, and by a low projection from the main land. The anchorage in the bay is safe, and the depth of water is from 7 to 10 fathoms. A shoal extends about 400 yards from the beach, except immediately opposite the town; here a fine mole has been formed, within which vessels of large burden may lie and discharge their cargoes. There is always a heavy surf on the beach, but within the mole boats can always land with safety. Provisions are abundant; wood is scarce, and the water bad. Callao is the port of Lima, to which it is joined by a fine road, 7 miles long and bordered with trees. The old town of Callao was destroyed by an earthquake in 1746; vestiges of it may still be seen at low water. The present town is farther from the sea than the old town. Owing to the mildness of the climate, and the frequency of earthquakes, the houses are constructed of light materials, generally wicker-work plastered with mud. The most substantial buildings are the three forts which command the harbour, the barracks, and the custom-house, which was formerly a strong castle, considered the key of Peru.

The Peruvian ships in 1840 amounted to 57 (6637 tons). In the same year the custom duties on British goods, chiefly cottons and linens, amounted to 240,000*l.*; and the total value of British manufactures sent to Peru through Callao and Valparaiso was 1,230,000*l.* The exports from Callao consist of bark, bullion, specie, copper in ore and in bars, raw cotton, hides, &c. The value of the exports to Europe and the United States in 1840 was 948,346*l.*, being an increase of 315,476*l.* on the preceding year.

CALLCOTT, JOHN WALL, one of the brightest ornaments of the British school of music, was born in 1766, at Kensington, where his father carried on the business of a builder. Music, at first his amusement, accidentally became his profession, the study of which he prosecuted without any master; though by a constant attendance at the Chapel Royal, at Westminster Abbey, and many concerts, together with the friendly hints given in frequent conversation with Doctors Cooke and Arnold, he no doubt profited very largely.

He commenced his professional career as deputy-organist of St. George the Martyr, Queen Square. In 1785, when only nineteen years of age, he appeared as a candidate for the prizes annually given by the Catch Club, and obtained three out of the four gold medals.

At the early age of nineteen, Mr. Callcott was admitted bachelor in music by the University of Oxford. In 1787 he assisted in forming the Glee Club. In 1790 he took advantage of the arrival of Haydn in this country, and derived considerable knowledge in the higher branch of instrumental composition from that illustrious musician. He advanced to the degree of doctor-in-music, at Oxford, in 1790. His 'Musical Grammar' appeared in 1805. About the year 1806 he undertook to deliver lectures on music at the Royal Institution; but his mind, long overstrained, sank under the burdens he had laid upon it. His mental powers were never permanently restored. He died in May 1821.

The productions of this original and ingenious composer are too numerous, and indeed too well known, to be particularised here: the choicest of them were, in 1824, collected and published in two handsome volumes, by his son-in-law, Mr. Horsley.

CALLCOTT, SIR AUGUSTUS WALL. This distinguished landscape-painter was born at Kensington, in 1779, and died in the same place in 1844. He was the brother of the distinguished composer, Dr. Callcott, and he himself, in early life, officiated for several years in the choir of Westminster Abbey. He, however, preferred painting to music. The success of a portrait which he painted under the tuition of Hoppner, in 1799, led him to the final choice of painting as his profession. In 1803 he devoted himself exclusively to the study of landscape-painting.

Callcott was elected an associate of the Royal Academy in 1807, and a member in 1810. In 1837 he was knighted by the queen; and at the death of Mr. Seguier, in 1844, he was appointed his successor as conservator of the royal pictures. In the last few years of his life he was unable to undergo the ordinary exertions of his profession. He was buried in Kensal Green Cemetery, where his wife, Lady Callcott (known as a traveller in India by her former name of Mrs. Graham), had been buried two years previously.

Callcott was for many years a steady and large contributor to the exhibitions of the Royal Academy. His landscapes were generally of small dimensions, and all very similar in style; but most of them are extensive as views and extremely quiet, and strictly belong to the beautiful as a class. His works are perhaps more frequently original characteristic pictures of certain scenery, as 'Italy,' 'Morning,' 'Evening,' &c., than mere views of particular localities. He was not less estimable as a man than he was meritorious as an artist.

CALLEIDA, a genus of coleopterous insects of the section *Truncatipennes* and family *Brachinidæ*. This group was separated from the genus Tarus of authors by Dejean, and is chiefly distinguished by the species having the penultimate joint of the tarsi bilobed. Upwards of twenty species of this genus are enumerated in Dejean's catalogue, most of which are of brilliant metallic colouring, and inhabit the hottest climates, in

both of which respects they likewise differ from the typical species of Tarus.

CALLENDER. [PERTHSHIRE.]

CALLIANASSA (Leach), a genus of macrourous decapod crustaceans (lobsters) remarkable for the inequality both in size and form of the claws (*chelæ*). (See Cuvier's 'Règne Animal,' vol. iv. p. 87.) Only one species is known, *Callianassa subterranea*, found on the sands of the sea-shore, washed up by the tides, on the French and English coasts.

CALLIANI'RA, a genus of the ciliograde acalephæ, established by Peron and Lesueur, and probably allied to Beroe. [BEROE.] Body regular, gelatinous, hyaline, cylindrical, elongated, tubular, obtuse at the two extremities, and provided with two pair of wing-shaped appendages, which develope themselves in large foliations, and are fringed with a double row of vibratory cilia upon their edges; a pair of branched tentaculiform appendages; and a large transverse opening at one of the extremities, perhaps at the other. This genus is only known by figures and descriptions. Example, *C. triploptera*.

CALLI'CERA (Meigen), a genus of insects of the order *Diptera* and family *Syrphidæ*, section *Athericera*. This genus is allied to Ceria of Fabricius, and differs principally in having the body shorter and wider in proportion, and silky. The second joint of the antennæ is shorter than the last, and forms with it an elongated and slightly curved club.

CALLICHRO'MA, a genus of coleopterous insects of the section *Longicornes* and family *Cerambycidæ*, distinguished from the allied genera (*Cerambyx, Phœnicocerus*, &c.) by having the maxillary palpi smaller than the labial, and shorter than the terminal lobe of the maxillæ. The posterior tibiæ are generally much compressed. As in the genus cerambyx, the species of this genus emit a very agreeable odour.

CALLI'CHTHYS (Linnæus), a genus of fishes belonging to the section *Abdominal Malacopterygians* and family *Siluridæ*, distinguished by the species having the body almost entirely protected by four ranges of large hard scaly plates: the head is also protected with plates of the same texture. The snout and under surface of the body are the only naked parts. The mouth is not deeply cleft, and is furnished with four long cirri, two from each corner; the teeth are very small; eyes small, and situated on the side of the head. The species of this genus generally frequent rivers and streams. Like eels, they can live for a considerable time out of water, and as they are natives of hot climates, the streams which they inhabit not unfrequently dry up: when such is the case, they are said to perform long journeys overland, using their strong and bony pectoral fin-ray as a propeller, in quest of some other stream. In some instances they bury themselves in the mud.

CALLICRATES. [PARTHENON.]

CALLICRA'TIDAS, a Spartan, who was appointed to succeed Lysander in the command of the Peloponnesian fleet in the Ægean Sea, B.C. 406. He was no match for Lysander and his friends in the arts of intrigue; and they used their best endeavours to frustrate his operations. For the pay of his fleet he was dependent upon Cyrus [CYRUS], the Persian commander-in-chief in western Asia Minor; and when he went to that prince at Sardis, to obtain a supply of money, he was so disgusted by Asiatic pride and ceremony, and dilatoriness, that he left without accomplishing the object of his journey. Having obtained a sum upon loan, he sailed to Lesbos, and took Methymne by assault.

After this success Callicratidas met Conon, the Athenian commander, at sea, whom he defeated and blockaded in the harbour of Mytiléne. Intelligence of this arriving at Athens, a fleet of 110 ships was equipped and sent to the relief of Conon. Callicratidas left 50 ships to maintain the blockade, and with only 120 advanced to meet the enemy, whose number was increased by reinforcements from the allied states. The fleets met between Lesbos and the main land, near the small islands called Arginúsæ. Hermon, the master of Callicratidas's ship, recommended him to retreat without hazarding a battle. He replied, that if he were dead Sparta would be no worse off; but that it was base to fly. The battle ended in the complete defeat of the Lacedæmonians, and Callicratidas perished.

(Xenophon, *Hellenics*, lib. i. c. 6.)

CALLI'DIUM, a genus of coleopterous insects of the section *Longicornes* and family *Cerambycidæ*. Technical characters:—Body depressed, thorax wider than the head, rounded at the sides; antennæ generally shorter than the body; palpi rather short; the terminal joint thicker than the rest, and truncated at the apex. Legs short; femora suddenly thickened towards the apex, especially in the males; tibiæ simple.

Callidium bajulus is not an uncommon insect in this country: it lives during the larva state in fir timber, and when it occurs plentifully is exceedingly destructive. The perfect insect is about three quarters of an inch long, of a flattened, elongate form, and dull black or pitch colour; the thorax is pubescent and has two smooth glossy tubercles on the disc; the elytra are furnished with a fascia (more or less distinct) of silvery white hairs.

Instances have been recorded of these insects attacking the fir rafters of houses, to which they are of course exceedingly injurious, and we have known instances when the perfect insects, in order to effect their escape, have perforated the lead with which the house-top was covered.

In many of the deal palings in the neighbourhood of London, and elsewhere, numerous oval-shaped holes (about a quarter of an inch in diameter) may be observed; these are formed by the perfect insect of this species of Callidium to effect their escape, having passed through the larva and pupa states within the wood.

Mr. Stephens, in his 'Catalogue of British Insects,' enumerates thirteen species of this genus, but of these many have undoubtedly been imported in foreign timber.

CALLI'MACHUS, a celebrated Greek sculptor, lived probably about the time of Phidias.

He was apparently an Athenian, though some claim him for Corinth, because he is recorded by Vitruvius as the inventor of the Corinthian capital. If Callimachus invented the Corinthian capital, this circumstance enables us in some degree to fix his time. It must have been before the 95th Olympiad, about 400 B.C., for Scopas then erected a temple of Minerva, according to Pausanias, with columns of the Corinthian order at Tegea. According to Pausanias, Callimachus was not an artist of the highest merit. (Pliny, *Hist. Nat.* xxxiv. 8. 19; Vitruvius, iv. 1; Pausanias, i. 26.)

CALLI'MACHUS, a Greek poet, was at the height of his reputation a little after the time of the first Punic War, 264 B.C. He was born at Cyrène. Callimachus, before he was taken into favour by Ptolemæus Philadelphus, kept a school in a quarter of Alexandria called Eleusis, and had among his pupils Eratósthenes, Aristóphanes of Byzantium, the grammarian, and Apollonius of Rhodes. He was alive when Ptolemæus Euérgetes ascended the throne, B.C. 247. Of his numerous writings only some hymns and epigrams remain. The poems of Callimachus display more of grammatical art than of poetical imagination, although they are not without that kind of beauty which is the result of labour and learning. The first edition of the Hymns of Callimachus was by John Lascaris, Florence, 4to., probably printed about A.D. 1500. The latest editions are that by Blomfield, 8vo., London, 1815, and a small edition by Volger, Leipzig, 1817, 8vo.

CALLIMO'RPHA (Latreille), a genus of insects of the order *Lepidoptera*, section *Nocturna*, and family *Lithosiidæ* (Stephens). Technical characters:—Antennæ slightly ciliated in the males; palpi small, three-jointed; legs moderate, the hinder tibiæ each with two pairs of spurs; body slender, especially in the males; wings large, somewhat triangular, with the hinder margins rounded. *Callimorpha Jacobææ* (the pink underwing), a very beautiful and common moth, is an example of this genus.

CALLINGTON. [CORNWALL.]

CA'LLIODON, a genus of fishes of the section *Acanthopterygii* and family *Labroides*. This genus was separated from that of Scarus (Linn.) by Cuvier, and differs in the species having the lateral teeth of the upper jaw divided and pointed; the upper jaw is also furnished with an inner range of small teeth. *Scarus spinidens* of Quoy and Gaimard is given as an example of this genus. [SCARUS.]

CALLIO'NYMUS, a genus of fishes of the section *Acanthopterygii* and family *Gobioidæ*.

The species of this genus are known in England by the name of Dragonets. Their branchiæ have but a single small opening placed near the nape of the neck; their ventral fins are widely separated, larger than the pectorals, and situated under the throat; the head is oblong and depressed; the eyes are placed on the top of the head and rather close together; body smooth and without scales; intermaxillaries very protractile; teeth small, numerous, and placed on the jaws only: the anterior dorsal fin has the first ray elongated.

Two species of this curious genus (remarkable for the peculiarities in the branchiæ and ventral fins, above noticed) are found on our own coasts; of these, the Sordid Dragonet (*C. dracunculus*) is the better known, being frequently met with at the mouth of the Thames. It is about ten inches long and of a reddish brown colour above; the under parts, the head, pectoral and ventral fins, uniformly white; the dorsal fins are of an immaculate pale brown. The Gemmeous Dragonet (*C. lyra*), the other British species, very closely resembles the one above described, and indeed has by some been considered as the same species. There appears, however, to be very good grounds for separating them, independent of the difference of colour. The prevailing hue of this species is yellow of various shades, with sapphirine stripes and spots on the head and sides of the body. The ventral and caudal fins are blueish black. This species has been found on various parts of our own coast, as well as that of Ireland. It also occurs in the Mediterranean and on the coast of Norway.

CA'LLIOPE. [MUSES.]

CALLIPERS. [CALIBRE.]

CALLI'RHOE, a genus of simple Acalephæ, characterised by Peron and Lesueur. It is discarded by Cuvier, 'Règne Animal,' vol. iii. p. 276, note 4.

CALLI'STHENES. [ALEXANDER.]

CALLI'STRATUS, a Roman jurist, who was writing under the joint reign of Severus and Antoninus, by whom are meant Septimius Severus and his son Antoninus Caracalla. Severus died A.D. 211.

Callistratus is one of the Jurists from whose writings Justinian's Digest was compiled. The works of Callistratus from which the excerpts in the Digest are taken were—six books De Cognitionibus; six books of the Edictum Monitorium; four books on the Jus Fisci; three books of Institutiones; two books of Quæstiones. Callistratus was one of those Roman jurists who wrote institutional treatises, such as that of Gaius.

CALLI'STUS (Bonelli), a genus of coleopterous insects of the family *Harpalidæ* (Mac Leay). Technical characters:—Three basal joints of the anterior tarsi, dilated in the males; palpi with the terminal joint elongated, rather ovate, and terminated almost in a point; antennæ filiform and slightly compressed; labrum transverse, emarginated anteriorly; head somewhat triangular; thorax nearly heart-shaped; body rather short and depressed. Only one species of this genus has hitherto been discovered, but it is found almost all over Europe: it is not uncommon in France, and is found beneath stones. In England it is rather scarce. It is beautifully coloured.

CALLITRICHA'CEÆ, a small natural order of achlamydeous dicotyledonous plants, consisting of a few obscure floating species, all of which belong to the genus Callitriche. The distinctive character resides in the presence of several one-seeded carpels, combined into a single pistil with two styles, and altogether destitute of any floral covering.

CALLI'TRICHE, a genus of plants, a type of

the natural order *Callitrichaceæ*. Five species have been described, four of which are natives of Great Britain. They are water-plants with smooth leaves, and are known by the name of Water-Starworts.

CALLITRIS. [THUJA.]

CALLOT, JACQUES, an eminent engraver, was born at Nancy in the year 1593. His father discountenancing his choice of a profession, he fled from home in order to make his way to Rome, the capital of the fine arts. At Rome he met some acquaintances of his family, who compelled him to return home. He ran away a second time, and was a second time brought back. He set out a third time, with his father's tardy concurrence, and studied for a long time at Rome. On his way homewards he was detained for many years by Cosmo II. He acquired considerable wealth and fame. He died in 1635. His invention is lively and fertile, and he had a singular power of enriching a small space with a multitude of figures and actions. He engraved both with the burin and the needle; but his best works are free etchings, touched with the burin, delicately executed, and sometimes wonderfully minute.

CALLU'NA (from *καλλύνω*, to make beautiful), a genus of plants belonging to the natural order *Ericaceæ*. There is only one species of this genus, the common Heath (*C. vulgaris*). It is a low-tufted shrub with small, sessile, closely imbricated leaves. The colour of the flowers varies from a deep red to a white, and numerous varieties have been named. This plant is common on every heath in Great Britain.

CALMAR, or KALMAR, a town in Sweden (about 56° 40′ N. lat., and 16° 20′ E. long.), in that portion of the ancient province of Smaland which now forms the division of Calmar Län. The town itself is on the isle of Quarnholm, in the strait of Oeland. It is united by a bridge to a suburb, which is on the continent. The suburb contains the old castle of Calmar, in which the peace of Calmar was concluded in 1397, whereby the kingdoms of Denmark, Sweden, and Norway, were united under one sovereign. The town is regularly built, but few of the houses are of stone. The most remarkable building is the cathedral. The harbour is good, and the commerce of the town active. It exports iron, alum, pitch, tar, boards, &c., and a great quantity of stone from the quarries of Oeland. Many vessels are built here. There are manufactories of snuff and potash. The population is 5900.

CALMET, AUGUSTINE, was born near Commercy, in the present department of Meuse, in France, Feb. 6, 1672, and received the first rudiments of his education at the priory of Breuil; he studied rhetoric afterwards at Pont-à-Musson. He afterwards entered among the Benedictines in the abbey of Mansuy, where he professed their vows in 1689. Greek, Hebrew, philosophy, and divinity, engrossed his time until 1704, when he was appointed sub-prior at the abbey of Münster. In 1707 he published the first volume of his Commentaries upon the Bible. In 1715 he purchased the priory of St. Lay, and three years afterwards he was appointed abbé of St. Leopold of Nancy. In 1723 he was chosen abbé of Sénones. He died Oct. 25, 1757, greatly esteemed both for learning and for moderation. Perhaps the most useful of Calmet's numerous works, certainly the one most familiar to the English reader, is the 'Dictionary of the Bible.'

CALMUCKS. [MONGOLIA; RUSSIA.]

CALNE. [WILTSHIRE.]

CALOCHO'RTUS, a beautiful genus of bulbous plants belonging to the natural order *Liliaceæ* and nearly allied botanically to the fritillary and tulip, from both of which it is immediately known by the sepals being of a different form, colour, and texture from the petals. They are natives of California; but in this country they do not succeed very well, unless they are cultivated in pits where they are protected from frost and water stagnating about their roots, and can be exposed freely to light and air when growing.

CALOMEL. [MERCURY.]

CALO'NNE, CHARLES-ALEXANDRE DE, born at Douai Jan. 20, 1734, was successively procureur-général to the parliament of Douai, intendant of Metz, contrôleur-général, and ministre-d'état. He found the finances in a state of great embarrassment, and advised Louis XVI. to convoke the assembly of the Notables in 1787. Being accused of malversation, he was dismissed by the king. Calonne retired to Flanders, and afterwards to England, where he spent the greater part of his latter years, and wrote numerous political and financial pamphlets. His 'Tableau de l'Europe en Novembre 1795,' 'Pensées sur ce qu'on a fait et ce qu'on n'auroit pas dû faire,' 8vo., 1796, 'Des Finances Publiques de la France,' 1797, &c., afford materials for the history of those times. In 1802 he obtained leave of Bonaparte to return to France, where he died in October of the same year.

CALOPHYLLUM (from *καλὸς*, beautiful, and *φύλλον*, leaf), a genus of plants belonging to the natural order *Guttiferæ*. They are trees, the leaves of which have numerous transverse parallel veins, which give them a very beautiful appearance.

C. Inophyllum is a tree native of the East Indies, and often attains a height of 90 or 100 feet. It has large handsome leaves like those of a water-lily, snow-white fragrant flowers, and a fruit about the size of a walnut. The nuts afford a fixed oil, which is expressed and used for burning in lamps.

C. Calaba, Calaba-tree, attains a height of 60 feet, and is a native of the Caribbee Islands. It has white sweet-scented flowers, and a green fruit something like the cornelian cherry, which contains a white solid kernel. An oil is expressed from the seed for domestic uses and for burning in lamps. The timber is used for various purposes, especially for staves and cask-headings.

CA'LOPUS, a genus of coleopterous insects, of the section *Stenelytra* and family *Œdemeridæ*. The species are distinguished by having the femora of the posterior legs of the same size in both sexes, or nearly so; the antennæ with the second joint much shorter than the third, more or less serrated, and inserted into an emargination of the eyes.

CALORIMETER. [HEAT.]

CALOSO'MA, a genus of coleopterous insects, of the section *Geodéphaga* (Mac Leay), and family *Carabidæ*. Technical characters:—Three basal joints of the anterior tarsi, in the males, much dilated, the fourth joint slightly so; antennæ with the third joint longer than the rest; labrum bilobed; mandibles simple, slightly bent, and transversely striated; thorax short; elytra generally rather broad and short. This genus is very closely allied to the true Carabi; indeed so much so, that it is difficult to point out any very tangible distinguishing characters; and yet the entomologist is seldom puzzled in separating them, even without close examination. To the genus *Calosoma* belongs our largest and most beautiful carabideous insect, *C. sycophanta*.

CALO'TROPIS GIGANTE'A (R. Brown), *Calotropis mudarii* (Buch.), *Asclepias gigantea* of Linnæus. The *Mudar*, a plant common in sandy places in many parts of India, has a milky juice in its stem, which, as well as the bark of the root, enjoyed such reputation among the native practitioners as a medicinal agent as to lead to its use among European practitioners in the East. It was found to be very efficacious in the cure of many obstinate cutaneous diseases, such as Lepra Arabum and Elephantiasis; in syphilitic complaints also and Anasarca it proved so valuable an alterative, that it received the name of Vegetable Mercury. Some use the powder of the bark of the root, but Sir Whitelaw Ainslie prefers the dried milky juice, which in a recent state, if taken in large quantity, is poisonous. It was thought to possess some specific quality; but Mr. Duncan, by whom extensive trials were made of it in Britain, showed that this is not correct, but that it is infinitely more valuable from its common medicinal properties, which correspond in every respect, according to him, both in kind and degree, with those of ipecacuanha. He even thought that, from the facility with which any quantity could be procured from Hindustan, the use of the Brazilian ipecacuanha might be altogether dispensed with in our East Indian settlements.

Besides its practical value as a medicinal agent, the bark of the root possesses the singular property in one of its constituents, *Mudarine*, of being very soluble in cold water, gelatinising when the solution is heated to 85° or 90° Fahr., and recovering its fluidity on cooling. It is the only instance known of any organic body being an exception to the general law of the power of solvents being increased by an increase of temperature.

CALOTSA, or KALOTSCHA. [HUNGARY.]

CALOTYPE. [PHOTOGRAPHY.]

CALOYER the name given to the Greek monks, from kalos and geras, meaning comely old age. They are mostly of the order of St. Basilius, and inhabit convents, the principal of which are on Mount Athos. There are also convents of female Caloyers.

CALPE. [GIBRALTAR.]

CALPENTYN (*Kalputti*), the name of a peninsula, gulf, and town, on the west coast of Ceylon. The peninsula is about 40 miles long, very narrow and generally very low; at high tides it becomes an island. The soil is sandy but fertile. Great quantities of cocoa-nuts, excellent grapes, mangos, citrons, guavas, and other eastern fruits are produced. The Gulf of Calpentyn separates the peninsula from the districts of Pomparippo and Putlam. It extends from about 7° 54′ to 8° 28′ N. lat., and the 80th degree of E. long. passes through it. It abounds in fish, chanks, and biche-de-mer. A good deal of salt is made along its eastern shore. The town of Calpentyn stands in the peninsula on the western side of the gulf, in about 8° 14′ N. lat., 79° 58′ E. long., 90 miles N. from Colombo. It consists of mud-built huts thatched with palm leaves, and a few large houses roofed with tiles; the whole is defended by a fort. The town trades in the produce of the country with Madras and the Coromandel coast, and by means of a canal with Chilaw and Colombo. On account of the sand-banks, vessels exceeding 100 tons cannot enter the harbour. The cocoa-nut is very extensively cultivated near the town.

CALPU'RNIUS, TITUS JU'LIUS, a Latin poet and a native of Sicily, has left eleven eclogues, written somewhat in the manner of Virgil's. He lived in the third century, and enjoyed the favour of the Emperor Carus. His Latinity is better than his taste, and his language more tolerable than his subject or his mode of treating it. [BUCOLICS.] These eclogues have been often edited, and are printed in the 'Poetæ Latini Minores' of Burmann.

CALTHA, a genus of Ranunculaceous plants. Two species of this genus are met with in this country, one of which, *Caltha palustris*, is common in meadows and by the side of wet ditches.

CALTROP, commonly called *Chausse-Trape*, or Crow's-Foot, a piece of iron formed with four points, each about three inches long, which are so disposed, that, when the piece is thrown on the ground, one of them will stand upwards. In warfare crow's-feet are sometimes scattered about in order to impede the march of cavalry.

CALTURA is a small town and fort in the district of Caltura on the south-western coast of Ceylon, situated on the left bank of the Kaluganga River, about 28 miles S. from Colombo. The district of Caltura is 38 miles long and 11 broad. It is very fertile; producing cinnamon, cocoa-nut, areca, and other trees, and, in the lowlands three crops of paddy in the year. The population of the district is about 54,000, and consists of Europeans, Cinghalese, and Mohammedans.

CALUMBO ROOT. [COCCULUS.]

CALUMET, the name given by the North American Indians to a pipe for smoking tobacco. In Harris's 'Voyages,' vol. ii. p. 908, the following description of this pipe is given:—'The calumet, or pipe of peace, is a large tobacco pipe, with a bowl of polished marble, and a stem two feet and a half long, made of strong reed, adorned with feathers and locks of women's hair. When it is used in treaties and embassies, the Indians fill the calumet with the best tobacco, and, presenting it to those with whom they have concluded any great affair, smoke out of it after them.' To re-

fuse the calumet is a sign of hostility. It is offered to strangers as a mark of hospitality. To smoke the calumet of peace literally signifies, in the language of the North American Indians, 'to be on terms of friendship and alliance.'

CALVADOS, a department in France formed out of several districts of Basse-Normandie. These districts are—Bessin, which extended between the Dive and the Vire, including the Bocage, the plain of Caen, and the territory of Bayeux; Auge, which comprised the valley of the Touque below Lisieux, and extended between the Touque and the Dive; and part of Lieuvin to the south and east of Lisieux. The department is bounded N. by the English Channel, E. by the department of Eure, S. by that of Orne, and W. by that of Manche. It lies between 48° 46′ and 49° 25′ N. lat., 0° 26′ E., 1° 10′ W. long. Its greatest length from E. to W. is 65 miles, its greatest breadth from N. to S. 43 miles. The area is 2147 square miles. The population in 1841 was 496,198, which gives an average of 231.11 to the square mile, being 63.1 above the average per square mile for all France.

The south-western angle of the department is crossed by the range of hills which separates the basins of the Loire and the Seine. The rest of the department consists of extensive plains, separated by low hills, and each drained by one or more rivers. The plains all incline from S. to N., and all the rivers fall into the English Channel. The coast, which extends from the mouth of the Seine to that of the Vire, is generally high and difficult of access. A ridge of rocks runs at a little distance from the shore, and parallel to it, for about 20 miles westwards from the mouth of the Orne. These rocks, which give name to the department, were called Calvados, from a Spanish ship belonging to the Armada that was wrecked upon them in 1588.

The principal rivers are—the Touque, which rises at Champhaut, in the department of Orne, and, running past Lisieux and Pont-l'Evêque, enters the channel a little below the town of Touques after a course of 50 miles: the Dive, which also rises in the department of Orne and enters the channel below the town of Dives; it is joined by the Vire, which drains the country between it and the Touque: the Orne, which rises at Aunou, in the department of Orne, flows N.W. past Séez, Argentan, and Pont-d'Ouilly, where it enters Calvados; then turning N.N.E. it passes Caen, and falls into the channel after a course of 62 miles: and the Vire, which rises in the south-west of the department, and passing Vire, Pont-Farey, where it enters the department of Manche, and St.-Lô, falls into the channel below Isigny in Calvados. All these are tide rivers, and are navigable for several miles from the sea at high water; on the left of the embouchure of each lighthouses are established. The Seulles and the Drome, which receives the Aure below Bayeux, flow into the channel through the plain between the Orne and the Vire. The department is crossed by 9 royal and 18 departmental roads; the parish roads also are numerous and well kept up.

The department contains 1,372,394 acres, distributed among 167,605 proprietors, and subdivided into 1,142,252 parcels. All this surface, with the exception of a small portion of heathland, is productive. On the rich pastures great numbers of cattle and horses are reared. The system of green feeding is extending rapidly, and large numbers of cattle are fattened for the markets of Paris and the interior. The horses are of the true Norman breed, and much valued for their shape and serviceable qualities. The poultry of the department is abundant and excellent. Great numbers of capons are sent to Paris. Wheat, potatoes, and cider apples are grown in large quantities. Of cider, the annual produce is 30,272,000 gallons. The best kind is that made in the Auge district; it will keep for years, and contains a large proportion of alcohol. Melons, haricots, onions, &c., are extensively cultivated. The department contains 988 wind and water mills, 152 foundries and furnaces, and 144 factories. Building stone, marble, slate, brick, potter's clay, and iron, are found. Marl abounds in the arrondissement of Lisieux and Pont-l'Evêque, and is used for manure. Coal mines are worked at Littry, in which several steam-engines are employed.

The chief industrial products of the department are cotton and woollen yarn, fine and coarse woollen cloths, linen, flannel, blankets, shawls, calicoes, lace, porcelain, and cutlery. Throughout the department the manufacture of lace alone gives employment to 50,000 persons, and the value of the lace annually exported amounts to many millions of francs. The department contains several paper-mills, sugar refineries, tanneries, oil-mills, and establishments for the manufacture of chemical products and bleaching linen. The commerce of the department consists of its industrial products, together with horses, fat cattle, butter, cheese, poultry, cider, honey, spirits distilled from cider, clover seed, hemp, wood, oil, &c. The imports are iron, wool, raw cotton, hides, and colonial produce. Great quantities of lobsters, oysters, and other fish, are taken along the coast, and conveyed to the markets of Paris and of the interior. Above 180 fairs are held in the year.

The department is divided into 6 arrondissements, which, with their subdivisions and population, are as follows:

Arrond.	Cantons.	Communes.	Pop. in 1841.
Caen	9	..	139,777
Bayeux	6	159	80,784
Falaise	5	143	61,163
Lisieux	6	158	68,313
Pont-l'-Evêque	5	134	57,673
Vire	6	97	88,488
Total	37		496,198

In the arrondissement of Caen the chief town is CAEN. Creuilly, on the right bank of the Seulles, Douvres on the coast, 8 miles from Caen, Tilly-sur-Seulles, and Villers-Bocage, which sends

great numbers of eggs to England, are chief towns of cantons, with populations mostly under 2000.

In the arrondissement of Bayeux the chief town is BAYEUX. Isigny, at the mouth of the Vire and the Aure, has a harbour for small vessels, and exports excellent butter, cider, *hams*, cattle, and other agricultural produce. It has a tribunal of commerce, and a population of 2500. The Vire is here crossed by a fine granite bridge. Litty, 10 miles from Bayeux, has 2,482 inhabitants. Balleroy, on the right bank of the Drome, near which there is a magnificent castle; Caumont, at the source of the Aure; and Trevières, on its left bank, are the chief towns of the other cantons.

In the arrondissement of Falaise the chief town is Falaise, 20 miles S.E from Caen, on the Ante, a feeder of the Dive. It stands on very uneven ground, and is divided into three distinct parts—the suburb of Guibray, which is built on the top of a hill; the town itself, which occupies the slope, and the faubourgs of Val-d'Ante and St.-Laurent, which are situated on the low ground. The churches of St.-Laurent, St.-Gervais, and Guibray, the hospital, the public library, and above all the ancient castle, which contains the apartment wherein the Conqueror was born, are the most remarkable buildings in the town. Falaise has tribunals of first instance and of commerce, a college, and a population of 8109. Cotton, hosiery, bobbin-net, and coarse calicoes are manufactured; there are also tanyards, paper-mills, dye-houses, and bleaching establishments. In the suburb of Guibray an important fair is held from the 10th to the 25th of August, at which great numbers of horses, cattle, and manufactured goods are sold. Bretteville-sur-Laise, Coulibœuf and Harcourt-Thury are small places, which give name to cantons. Harcourt-Thury was a duchy belonging to the family of Harcourt, whose vast castle still stands in a beautiful situation near the Orne.

In the arrondissement of Lisieux the chief town is Lisieux (*Noviomagus, Civitas Lexoviorum*), which was also the capital of the Lieuvin. It stands in a beautiful valley, watered by the Orbec and the Touque. The road from Caen to Evreux runs through the best and widest street in the town. The other streets are narrow and winding, the houses high, old, and mostly built of wood. The Gothic cathedral, a structure of the 12th century, which contains a beautiful Lady chapel (built by Pierre Cauchon, bishop of Beauvais, afterwards of Lisieux, and one of the judges of Joan d'Arc), and the former episcopal palace, are the finest buildings in Lisieux. The old ramparts are made into promenades. The town contains 11,378 inhabitants, and has tribunals of first instance and of commerce, a college, and ecclesiastical seminary. Linen, woollen cloth, flannels, swan-skins, horse covers, tape, woollen and cotton yarn, are manufactured. There are also tanyards, paper-mills, dye-houses, and fulling-mills. These products, together with corn, cider, butter, hemp, flax, and cattle, form the items of a brisk trade, which is much facilitated by the Touque, which is navigable at high water from Lisieux to its mouth. Orbec, 12 miles from Lisieux, stands in a lovely valley on the Orbec, a feeder of the Touque; it has a population of 3357, who are engaged in agriculture, and in the manufacture of hosiery, woollen stuffs, tape, and leather. Livarot, Mezidon, and St.-Pierre-sur-Dive, give name to the other cantons, and have populations not exceeding 2000.

In the arrondissement of Pont-l'Evêque the chief town is Pont-l'Evêque, the capital of Auge, which stands in a wide plain at the junction of the Touque and the Calonne. It was in this town that the Conqueror held the meeting of the states of Normandy, at which it was resolved to invade England.. Lace is the principal manufacture. Cider, cheese, butter, fat cattle, and wood, are the chief articles of trade. The town has a tribunal of first instance, and a population of 3300. Honfleur stands at the foot of a high hill on the left of the mouth of the Seine. It has a small harbour, which consists of two basins; the entrance to it is formed by jetties. A third basin is now nearly completed. The town is irregularly built; it has 2 churches, a royal school of navigation, and a population of 9580. The public buildings of Honfleur are remarkable for the oddness of their ancient architecture. Vessels belonging to the town are engaged in the cod, herring, and mackarel fisheries. Hosiery, lace, chemical products, ironmongery, and hardware, are manufactured. There are also saw-mills, sugar refineries, rope-walks, and ship-building yards. Corn, cider, melons, sausages, and fish, are the chief articles of trade. There are two lighthouses at Honfleur. Blangy, Cambremer, and Dives, at the mouth of the Dive, from which the Conqueror sailed against England in 1066, are small places, none of which have a population much exceeding 1000.

In the arrondissement of Vire the chief town is Vire, the capital of the Bocage, which is built on two steep hills, separated by the river Vire. The largest portion of the town stands on the right bank; here are the general and the foundling hospitals. The part on the left bank contains the sub-prefect's hotel and several large well-built houses. The other remarkable buildings are the church of Notre-Dame, the Hôtel-Dieu, founded by the dukes of Normandy, the public library, and the corn market. The town has a college, tribunals of first instance and of commerce, and contains a population of 7400, who manufacture fine linen, woollen cloths for the army, woollen yarn, and paper, and trade also in corn, wine, brandy, flax, hardware, and iron. There are the remains of an ancient castle at Vire, the possession of which was often contested by the English, French, and Bretons. Condé-sur-Noireau, at the junction of the Druance and the Noireau, is 14 miles E. from Vire, and has 5976 inhabitants. It was held by the English till 1449, and was one of the first places to embrace the reformation. It is a very ancient-looking place. The churches of St.-Sauveur and St.-Martin are the most remarkable buildings. The town has a tribunal of commerce; manufactures woollens, calicoes, cotton yarn, cutlery, and leather; and trades also in cattle, flax, yarn, and honey. Aulnay-sur-Odon,

Beny-Bocage, St.-Sever, and Vassy, are the chief towns of cantons, and have populations not exceeding 2000, except Vassy, which has 3276.

The department forms the bishopric of Bayeux, is included in the jurisdiction of the Cour Royale and of the University Academy of Caen, and belongs to the 14th military division, of which Rouen is head quarters. It returns 7 members to the Chamber of Deputies.

(*Dictionnaire de la France;* Balbi, *Géographie.*)

CALVARY. [JERUSALEM.]

CALVERT, GEORGE. [BALTIMORE, LORD.]

CALVERT, DENIS, sometimes called FIAMMINGO, a distinguished painter, especially in landscape, was born at Antwerp about 1555. He settled early in Bologna, and after visiting Rome and Parma opened a school at Bologna, which was unrivalled until the establishment of the famous school of the Caracci. He died in 1619. There is nothing peculiarly Flemish in his style; his pictures are generally well coloured, and strictly in an Italian style of design. His masterpieces are a St. Michael in the church of San Petronio, and a Purgatory alle Grazie. (Malvasia, *Felsina Pittrice;* Lanzi, *Storia Pittorica,* &c.)

CALVIN, JOHN, was born July 10, 1509, at Noyon, in Picardy, where his father was a cooper. Young Calvin, who had early shown a pious disposition, was taken under the protection of a family of wealth in the place, and sent by them to the university of Paris to study for the church. At the age of twelve he obtained a benefice in the cathedral of Noyon, to which, in about five years afterwards, was added the cure of Monteville. His father now changed his mind as to the destination of his son, and desired him to turn his attention to the law. This change was not unacceptable to Calvin, who had already been convinced of many of the errors of the Romish church. He accordingly repaired, first to Orléans, and then to Bourges, where Andrew Alciat filled the chair of law; and where also Melchior Wolmar, the reformer, taught him the Greek tongue. Here Calvin was confirmed in the doctrines of the reformation, and began indeed to preach them in the villages. In 1532 he went to Paris, and devoted himself to divinity. Cop, the rector of the university of Paris, having occasion to read a public discourse on the festival of All Saints' Day, Calvin persuaded him to declare his opinion on the new doctrines. This brought upon them both the indignation of the Sorbonne and parliament, and they were forced to leave the city. The Queen of Navarre having shown Calvin some countenance, he returned to Paris in 1534, under her protection; but, persecution being again threatened, he quitted France the same year, and retired to Basel, in Switzerland, where he published the 'Institutio Christianæ Religionis.' The design of the 'Christian Institution' was to exhibit a full view of the doctrines of the reformers. Its effect upon the Christian world has been so remarkable as to entitle it to be looked upon as one of those books that have changed the face of society. After the publication of this work, Calvin went to Italy, but the Inquisition compelled him to seek safety in flight. In 1536 he went to Geneva, where the reformed religion had been the same year publicly established. Here he became a preacher of the Gospel, and professor, or rather lecturer on divinity. In the month of November, a plan of church government and a confession of faith were laid before the public authorities for their approval. Beza makes Calvin the author of these productions; but others, with perhaps greater reason, attribute them to Farel. There is little doubt however that Calvin was consulted in their composition, and still less that he lent his powerful aid to secure their sanction and approval by the people in the month of July, 1537. But the popular will was not prepared for the severe discipline of the reformers, and in a short time the people resisted some innovations on their religious practices, and expelled Farel and Calvin from the place. Calvin repaired to Berne, and then to Strasburg, where he became minister of a French church, and there introduced his own form of church government and discipline. While at Strasburg, Calvin published a treatise on the Lord's Supper, in which he combated the opinions both of the Roman Catholics and Lutherans. Here too he published his 'Commentary on the Epistle to the Romans.'

In May 1541, the banishment of Calvin and Farel from Geneva was revoked; and in September following Calvin was received into the city amidst the congratulations of his flock. He immediately laid before the Council his scheme of church government, and after it was adopted and published by authority, which was on the 20th of November, 1541, he was unhesitating in its enforcement. His promptitude and firmness were now conspicuous: he was the ruling spirit in Geneva; but his intolerance in the matter of Servetus is a blot upon his memory. [SERVETUS.] In 1554, the year following Servetus's death, Calvin published a work in defence of the doctrine of the Trinity against the errors of Servetus, and to prove the right of the civil magistrate to punish heresy. Calvin continued to edify the church of Geneva by his sermons and his intercourse among the people, and to instruct Europe by his works. On his death-bed he took God to witness that he had preached the Gospel purely, and exhorted all about him to walk worthy of the divine goodness. On the 27th of May, 1564, he died in the fifty-fifth year of his age. Calvin had a clear understanding, an incredible memory, and a firmness and inflexibility of purpose which no opposition could overcome, no variety of objects defeat, no vicissitude shake. In his principles he was devout and sincere, and the purity of his character in private life was without a stain. His works are very numerous. A list of them is given by Senebier, 'Histoire Littéraire de Genève,' tom. i.

CALVINISM, the system of religious doctrine and church government maintained by Calvin and his followers. Calvin, as we have seen, published his system in his 'Christian Institution' in the year 1536; but it does not appear to have obtained the name of Calvinism, nor its supporters the name of Calvinists, till the conference of

Poissy in 1561. In the debate which there took place on the Augsburg Confession, the points of difference between the Lutherans and Calvinists were drawn out; and they were such as that from thenceforth the latter became known as a distinct sect under that denomination.

The tenets of Calvinism respect the doctrines of the Trinity, predestination, or particular election and reprobation, original sin, particular redemption, effectual or irresistible grace in regeneration, justification by faith, and the perseverance of saints; together also with the government and discipline of the church, the nature of the eucharist, and the qualification of those entitled to partake of it. The greatest leading principles of the system however are the absolute decrees of God, the spiritual presence of Christ in the eucharist, and the independence of the church.

Calvinism was perhaps, like Lutheranism, exemplified first at Strasburg; but it was at Geneva that the system was seen in all its vigour; and from thence it spread into France, Germany, Prussia, the United Provinces, England, and Scotland. To this last place it was carried by Knox, who was a disciple of Calvin.

CALW. [SCHWARZWALD.]

CALX. [CALCINATION.]

CALYCANTHA'CEÆ, a natural order of hardy dicotyledonous plants, well known in gardens for the delicious fragrance of their blossoms. They are in some respects allied to the magnolia, or Star-Anise Plant (*Illicium*), in consequence of their chocolate-coloured flowers with the segments overlying each other in several rows, and because also of their peculiar fragrance; their true affinity is however with *Rosaceæ*, as the mass of their characters sufficiently proves.

Calycanthaceæ consist of but two genera, *Calycanthus* and *Chimonanthus*. The genus *Calycanthus*, the Carolina Allspice, consists of small shrubs, natives of North America, with fragrant chocolate-coloured flowers, appearing along with the leaves in May or June. *Chimonanthus*, the Japan Allspice, has but one species, which is found wild in Japan, and has fragrant lemon-coloured blossoms, which appear in the winter after the fall of the leaves.

CALYCERA'CEÆ, a small natural order of monopetalous dicotyledons, differing from *Compositæ* in nothing but their seeds having albumen, and being pendulous, and in their anthers being only half syngenesious.

CALYCIFLO'RÆ, an artificial division of polypetalous dicotyledonous plants, proposed by Jussieu and adopted by Professor De Candolle. It is characterised by the stamens adhering more or less to the side of the calyx, or, in the language of the French school of botanists, being perigynous.

CALYCOPHY'LLUM (from κάλυξ, calyx, and φύλλον, leaf), a genus of plants belonging to the natural order *Cinchonaceæ*. The species are small smooth trees, with opposite glabrous leaves, short stipules, and flowers disposed in axillary and terminal dichotomous corymbs. One of the most remarkable species of this genus, *C. Stanleyanum*, has been lately described by Sir Robert Schomburgk as a native of British Guiana. There are several genera closely allied to Calycophyllum. In the species discovered in Guiana the bractlike expansion of the calyx has a rose colour, and, as the flowers are very numerous, the whole tree assumes the colour of the rose. (Hooker; *London Journal of Botany*, 1844.)

CALYMMA, a genus of *Ciliograda*, thus characterised by Eschscholtz:—Body but little elevated, compressed, widened as it were, and provided on each side with a considerable appendage, taking its rise from four other smaller appendages, free at their extremity, near the mouth, and furnished with the series of cilia. The species on which the genus was established was taken in the South Seas near the equator.

CALY'PTRA, a name given to a hood-like body connected in some plants with the organs of fructification. In the genus *Pileanthus* it covers over the flower, and is formed of united bracts; in *Eucalyptus* and *Eudesmia* it is simply a lid or operculum to the stamens, and is produced in the former by the consolidated sepals, in the latter by the petals in the same state: in mosses it is seated upon the end of the fruit-stalk, inclosing the spore-vessel, and is a leaf rolled round the latter and torn away from its base: in *Jungermannia* it exists in the form of a cup or wrapper at the base of the fruit-stalk, which, instead of carrying it up upon its point, pierces through its apex and leaves it behind.

CALYPTRÆ'IDÆ, a family of gasteropodous mollusks, formerly arranged under the genus *Patella* of Linnæus, and known by collectors as chambered limpets, comprising the genera *Calyptræa* and *Crepidula*, with the sub-genera into which they have been divided by Lesson.

M. Deshayes, in his edition of Lamarck, divides the genus *Calyptræa* into four well-characterised sections, of which the last, *Crepidula*, might be again subdivided. See Mr. Broderip's paper entitled 'Descriptions of some New Species of Calyptræidæ' in 'Trans. Zool. Soc.,' vol. i.; also 'Zoologie de la Coquille,' vol. ii. The species are numerous and widely diffused.

Fossil Calyptræidæ, some of which, are identical with recent species, occur in the various tertiary strata.

CALYSTE'GIA (from κάλυξ, calyx, and στέγω, to cover), a genus of plants composed of species formerly included under Convolvulus. The species are lactescent, glabrous, twining or prostrate herbs, with solitary one-flowered peduncles. *C. sepium*, Great Bindweed, is the Convolvulus sepium of older botanists. It is a native of Europe in hedges, and is very common in Great Britain. *C. soldanella*, Sea Bindweed, is a native of many parts of Europe on the sea-coast, and also some parts of Asia. The young stalks are sometimes eaten pickled. The juice of the mature plant is however a cathartic.

CALYX, the external wrapper of a flower within the bracts. Usually it is green and leaf-like; sometimes however it is coloured like a corolla, from which it is only known by its being the outermost of the rows of floral envelopes. It consists of leaves called sepals, which are some-

times separate, when the calyx is polysepalous, and sometimes united into a sort of cup by the edges, or monosepalous. Occasionally it is converted into feathery or short divisions, when it is named pappus; or it is altogether reduced to a small rim, so as to be hardly visible. In some plants it grows to the sides of the ovary, and is technically called superior, while it is named inferior if it is quite separate from that part. Its segments are usually of the same number as those of the corolla, and alternate with them.

CAMALDOLENSES, CAMALDOLITES, a religious order founded by St. Romualdo, at the beginning of the eleventh century. The first establishment of the order was in the high Apennines, above the Casentino, or valley of the Upper Arno, east of Florence. The Camaldolites are possessed of convents in various parts of Italy, mostly built in secluded and elevated situations. The order has produced many learned men; among others Fra Mauro, a geographer of the fifteenth century, Father Traversari, a philologist, besides the historians of the order.

CAMARGUE. [BOUCHES-DU-RHÔNE.]

CAMARI'NA, a town in the south of Sicily, on the river Hipparis, near the sea. Camarina was a Dorian town (Thucyd. iii. 86), the most considerable of the Syracusan colonies, founded B.C. 600 (Clinton, 'Fast. Hell.,' vol. i. p. 226, 135 years after the foundation of Syracuse from Corinth. (Thucyd. vi. 5.) The situation was unhealthy, owing to the neighbourhood of a marsh which was formed by the river Hipparis. Only a few ruins now remain. After many reverses Camarina was taken by the Carthaginians, B.C. 404. There are coins of Camarina, which are of superior execution.

Coin of Camarina. Brit. Museum. Silver. Actual Size.

Reverse.

CAMAROON. [BIAFRA.]

CAMBACE'RES, JEAN JACQUES DE, was born at Montpellier in 1753, and was educated for an advocate. He was elected deputy to the Legislative Assembly, in 1791, and afterwards to the Convention in 1792, where he voted for the death of Louis XVI. He afterwards sat in the Council of Five Hundred, and was made Minister of Justice under the Directory, in which capacity he greatly assisted Bonaparte in the revolution of the 18th Brumaire, and became one of his most useful and faithful adherents, and was made by Bonaparte Great Chancellor of the Empire. Cambacères was one of the compilers of the Civil Code. After Napoleon's first abdication in 1814, Cambacères lived in retirement. When Napoleon returned from Elba he appointed Cambacères Minister of Justice, notwithstanding his excuses. After the king's second return, Cambacères withdrew again to private life, and in Feb. 1816 he went to reside at Brussels. However, in May 1818, the king reinstated him in all his civil and political rights, in consequence of which he returned to Paris, where he died in 1824.

CAMBAY, a town of Hindustan, situated at the mouth of the Mhye River and at the head of the Gulf of Cambay, in 22° 20′ N. lat., and 72° 40′ E. long. When Gujerat was an independent state, Cambay, as the sea-port of its capital Ahmedabad, enjoyed a high degree of commercial prosperity, which it has since lost. The city contains several mosques and Hindoo temples, and the remains of many more religious edifices, the greater part of which appear to have belonged to the sect of the Jains, whose religion was formerly predominant in this part of India. The trade of Cambay formerly embraced the export of silk and chintz goods, jewellery, and indigo; but at present nearly all its export trade consists of grain sent to Bombay. The town and territory of Cambay were formerly governed by a native prince, who was tributary to the Mahrattas, but are now included in the territories of the Guicowar.

CAMBAY, GULF OF. [HINDUSTAN.]

CAMBING-OUTAN. [ANTELOPE.]

CAMBIA'SO, LUCA, sometimes called *Luchetto da Genova*, a celebrated Italian painter in fresco and in oil, was born near Genoa in 1527. He was instructed by his father Giovanni, a painter of merit. After a long and honourable career at Genoa, he went, in 1583, to Spain, where he executed several works in the Escurial, the largest of which was an immense fresco of Paradise. The oil painting of John the Baptist preaching in the Wilderness, also in the Escurial, is the best of his Spanish works. He died at the Escurial in 1585. He was a painter of surprising facility and power. His masterpiece is considered the Martyrdom of St. George in the church of San Giorgio at Genoa. The Rape of the Sabines, in Terralba near Genoa, is also a magnificent and celebrated work. (Soprani, *Vite de' Pittori*, &c.; Cean Bermudez, *Diccionario Historico*, &c.)

CAM'BIUM, a viscid substance which appears in the spring between the wood and bark of exogenous trees.

CAMBO'DIA, or CAMBODJA, is a very extensive country in the peninsula without the Ganges. It comprehends all the countries on both sides of the river Maekhaun, or Cambodia River, from its mouth as far as 15° N. lat. It is now included partly in Siam, but chiefly in Cochin-China. [COCHIN-CHINA; SIAM.]

CAMBOGE. This gum-resin was introduced

into Europe by Clusius about 1603. From the bruised leaves and young branches of *Stalagmites cambogioides* flows a yellow juice, which is received in cocoa-nut shells or earthen vessels; it is then allowed to thicken, and afterwards formed into rolls. This is the finest sort, called the Pipe Camboge of Siam. A portion is formed into round cakes, which are either entire or have a hole in the centre. This is the Cake Camboge of Siam.

At the ordinary temperature of the air, camboge, from whatever source obtained, has little smell, but when heated gives out a very peculiar one. Taken into the mouth it has scarcely any perceptible taste, but upon being chewed for some time it causes a sharp and somewhat acrid feeling, ending in a sweet sensation, accompanied with dryness in the mouth. It excites afterwards a flow of saliva, which is coloured yellow. Its specific gravity is 1.207. A specimen of pipe camboge of Siam, analysed by Dr. Christison, yielded—resin, 72.2; arabin, 23.0; moisture, 4.8.

Camboge is almost entirely soluble in alcohol, and is not precipitated from solution by the addition of water. With water it forms an emulsion, in which the resin is kept suspended by the gum. It is soluble in the alkalies. The resin may be considered its active principle. It is remarkable that a substance possessed of such slight sensible qualities, having no smell and scarcely any taste, should be so powerful in its action on the human frame. It is a drastic purgative, and, in combination with alkalies, forms a most powerful hydrogogue cathartic, occasioning numerous copious watery motions. In an over-dose it causes excessive purging, sometimes vomiting, and, if taken in large quantity, it produces inflammation of the intestines, mortification, and death.

The diseases in which it is most useful are ascites, or dropsical accumulations in the cavity of the abdomen, especially if accompanied with obstructions in the liver or other abdominal viscera. It has also been employed against the tape-worm and obstinate or habitual constipation. The doses must be carefully regulated, and only taken by the order of an intelligent and responsible medical attendant. Its use as a quack medicine has led in many cases to fatal results.

Camboge is more extensively used as a pigment than as a medicine.

CAMBRAI, a fortified city in the department of Nord, in France, stands on the right bank of the Escaut (Scheld), 19 miles S. of Douai, in 50° 10′ 37″ N. lat., 3° 13′ 32″ E. long., and has a population of 20,141. In the latter period of the Roman Empire it was named *Camaracum*, and was one of the capitals of the Nervii, *Turnacum* (Tournay) being the other. Charlemagne fortified the town, and Charles-le-Chauve ceded it to its bishops, by whom the sovereignty of it was long retained. In 1543 the Emperor Charles V. took Cambrai, and erected the citadel, on a height at the eastern extremity of the city. The fortifications were much strengthened by Vauban. The English took the town by escalade, June 24, 1815.

The city is large; the streets are wide enough, but not well laid out; the houses are well built, many of them are old, and present their gable ends to the street. The town is entered by four gates. The extensive square called Place-d'Armes is capable of containing all the garrison drawn up in order of battle. The city contains some fine buildings, among which the most remarkable are —the cathedral church of St.-Sepulchre, which contains the remains and the tomb of Fenelon; the church of St.-Géry; the public library, which is established in the church of the former hospital of St.-Jean, and contains 30,000 volumes, besides a large number of manuscripts; the town-house; the hospital; the theatre; and the palace of the archbishop. Among the literary establishments of the town are a college, a school of anatomy, and an ecclesiastical seminary. Tribunals of first instance and of commerce are held. The see of Cambrai dates from the fifth century: in 1559 it was erected into an archbishopric, which was suppressed at the Revolution, but re-established in 1841. The only suffragan of the archbishop is the Bishop of Arras.

Cambrai is favourably situated for trade, in consequence of its position on the Escaut and the canal of St.-Quentin. The chief manufactures are cambric, lawn, linens, thread, and cotton yarn, lace, hosiery, fine muslin, leather, black soap, starch, beet-root sugar, beer, brandy, salt, and salt-petre. The commerce of the town consists of these articles, and of corn, wine, wool, iron, cattle, coal, hops, &c.

(*Dictionnaire de la France.*)

CAMBRESIS, a district formerly in the Low Countries, now forms the greater part of the arrondissement of Cambrai, in the department of Nord in France. Cambrai, or according to others Cateau-Cambresis, was its capital.

CAMBRIAN ROCKS. Professor Sedgwick has established, in North Wales, beyond a doubt, the important fact, that beneath the slates and flags of Denbighshire, which belong to the upper Silurian strata, occur in the Berwyn Mountains and in the vicinity of Bala other strata containing lower Silurian fossils, to the extent of several thousand feet in thickness. In South Wales the progress of the Geological Survey, under Sir Henry De la Beche, has established the fact of very considerable thicknesses of partially fossiliferous rocks beneath the Llandeilo rocks, or lower Silurian strata of Murchison. By these labours we perceive that the Palæozoic forms of organisation descend, in Wales, many thousand feet below the lowest recognised Silurian strata.

CAMBRIDGE, a parliamentary borough, municipal borough, and the county town of Cambridgeshire, is about 48 miles N. by E. from London, direct distance, and 57 by the Cambridge branch of the Eastern Counties Railway. It is situated on the eastern side of the river Cam, except a small part which is extended over the bridge to the north-west. The ancient name of the Cam was the Granta, and the Romans had a town called Granta on or near the present site of Cambridge, and the name is written Grentebrige in 'Domesday Book.' The place suffered much from the Danes; it was at different times plundered, burnt, and occupied by them. William the Con-

queror, while the Saxons held out against him in the Isle of Ely, built a castle here, the gateway of which remained till a few years ago.

The town is situated in a plain, and all the surrounding country is flat. An iron bridge of one arch crosses the Cam to the north-west, and connects the two parts of the town. The Cam unites with the Ouse 2 or 3 miles above Ely, and the navigation is extended from Lynn, the Cam being made navigable for barges, by the aid of locks, to Cambridge.

Cambridge has a considerable trade in coals and grain, and a large quantity of butter is conveyed from Norfolk and the Isle of Ely to London, where it obtains the name of Cambridge butter; but the chief trade of the town is connected more or less directly with the university.

The general appearance of the town is not so good as might be expected, but houses of a better class and built with better taste are becoming more numerous. The principal public buildings, exclusive of those connected with the university, are the county courts, at the north-west extremity of the town, on the site of part of the ancient castle; the guild-hall, on the south side of the market; the conduit, which supplies the town with excellent water, and was erected by the well-known Hobson the carrier; the county gaol; the town gaol; Addenbrooke's Hospital; 13 churches, one of which is the curious Round Church of the Holy Sepulchre, the restoration of which was completed in 1843; and places of worship for Baptists, Independents, Methodists, and others. Besides the university institutions, there is a free grammar-school, the school-buildings of which have recently been reconstructed; a free school on the plan of Dr. Bell; Whiston's Charity Schools; and various common schools. There are also nine sets of almshouses, besides other charitable foundations.

Six of the colleges, situated on the eastern bank of the Cam, have bridges across the river, which connect the college grounds with meadows on the opposite bank.

The municipal borough of Cambridge is divided into 5 wards, and is governed by a mayor, recorder, 10 aldermen, 30 councillors, and other officers. The population in 1841 was 23,793, which is exclusive of the inhabitants of the university. The population of the parliamentary borough was 23,455: it returns two members to the House of Commons, and has sent members to parliament from the earliest times.

The village of Barnwell, now connected by its buildings with Cambridge, and with a population of about 10,000, was a century ago a detached hamlet, with only about fifty houses.

(*Cambridge Guide*, 1845; *Population Returns.*)

CAMBRIDGE, UNIVERSITY OF. The first establishment of this university is involved in much obscurity, but it is supposed to have been a seat of learning in the 7th century. The first charter known to have been granted to the university is 15 Henry III. (1230.) Charters were granted by Edward III. and Henry VIII. Queen Elizabeth, in the third year of her reign, granted a charter, and by an act 13 Eliz. c. 29 (1570) the university was incorporated under the title of the Chancellor, Masters, and Scholars, of the University of Cambridge. James I. in 1614 conferred on the university the privilege of sending two members to the House of Commons.

The University of Cambridge is a union of seventeen colleges. All these colleges possess equal privileges, are maintained by the endowments of their several founders and benefactors, and each is a body corporate, bound by its own statutes, though subject to the general laws of the university. Each of the seventeen colleges furnishes members both for the legislative and executive branch of university government. The place of assembly is the senate-house. All persons who are masters of arts, or doctors in one of the three faculties, of divinity, civil law, and physic, having their names upon the college boards, holding any university office, or being resident in the town of Cambridge, have votes in this assembly. The senate is divided into two houses, denominated the Regent House, or Upper House, and the Non-Regent House, or Lower House, the former consisting of the doctors of less than two and the M.A.'s under five years' standing, and the latter of the M.A.'s above five years. The doctors of more than two years' standing vote in either house at pleasure. There is also a council called the Caput, chosen annually, by which every university grace or proposition must be approved before it can be introduced to the senate. The caput consists of the vice-chancellor, a doctor in each of the faculties, and two masters of arts, who are the representatives of the Regent and Non-Regent houses respectively.

The principal officers of the university are—the Chancellor, who is the head of the university; the High Steward; the Vice-Chancellor; the Commissary; the Public Orator; the Assessor; two Proctors; the Librarian; the Registrar; two Taxors; two Scrutators; two Moderators, three Esquire Bedells; and others.

The following is a list of the colleges, with the date of the foundation of each:—

1.	St. Peter's College	1284
2.	Clare Hall	1326
3.	Pembroke College	1347
4.	Gonville and Caius College	1348
5.	Trinity Hall	1350
6.	Corpus Christi College	1351
7.	King's College	1441
8.	Queen's College	1448
9.	St. Catherine's Hall	1475
10.	Jesus College	1497
11.	Christ's College	1505
12.	St. John's College	1511
13.	Magdalene College	1519
14.	Trinity College	1546
15.	Emmanuel College	1584
16.	Sidney Sussex College	1588
17.	Downing College	1800

The colleges are described under their respective names, as PETER-HOUSE, &c.

The several orders in the respective colleges are classed as Graduates, and Undergraduates or Students. The Graduates consist of a Master or Head, Fellows, Doctors, and Bachelors. The Undergraduates consist of Fellow-Commoners, Pensioners,

Scholars, and Sizars. The government in each college is vested in the Master and Senior Fellows.

The professorships are as follows:—Regius Professorship of Divinity, Regius Professorship of Civil Law, Regius Professorship of Physic, Regius Professorship of Hebrew, Regius Professorship of Greek, Arabic Professorship, Lord Almoner's Reader and Professor of Arabic, Mathematical Professorship, Professorship of Casuistry, Professorship of Music, Chemical Professorship, Professorship of Experimental Philosophy, Anatomical Professorship, Professorship of Modern History and Languages, Botanical Professorship, Woodwardian Professorship of Geology, Astronomical Professorship, Norrisian Professorship of Divinity, Professorship of Natural and Experimental Philosophy, Downing Professorship of the Laws of England, Downing Professorship of Medicine, Professorship of Mineralogy, Professorship of Political Economy, Lady Margaret's Professorship of Divinity, Office of Christian Advocate, Hulsean Lectureship. There are, besides these professorships, various endowed lectureships.

The prizes and scholarships open to the competition of the whole university amount to upwards of 1600*l.* a year.

The income of the university arises from the rectory of Burwell, a farm at Barton, fees, trading profits of printing, &c., altogether estimated hardly to exceed 5500*l.* a year.

The public buildings which belong to the university are—the Senate-House; the University Library, which contains 200,000 printed books and 2000 MSS.; the Public Schools; Great St. Mary's Church; the Fitzwilliam Museum; the Astronomical Observatory; the University or Pitt Press; the Anatomical Museum; and the rooms of the Cambridge Philosophical Society. To the university belongs also the Botanic Garden, which comprises nearly four acres.

(Dyer's *History of the University and Colleges of Cambridge; Cambridge University Calendar; Cambridge Guide*, 1845.)

CAMBRIDGE, a town in Massachusetts, in the United States of North America, 3 miles N.W. from Boston, in 42° 22′ N. lat., 71° 8′ W. long. The town was settled in 1631 under the name of Newtown; the population in 1840 was 8409. Cambridge is the seat of Harvard University, formerly called Harvard College, founded in 1638, and the oldest college in the United States. Harvard College had, in 1846, a president, 30 professors or other instructors, 5942 alumni, 275 students, and 74,000 volumes in its libraries. (Haskel and Smith, *Gazetteer of the United States; American Almanack*, 1847.)

CAMBRIDGESHIRE, an inland county of England, is bounded W. by Huntingdonshire and Bedfordshire, E. by Suffolk and Norfolk, N. by Lincolnshire, and S. by Hertfordshire and Essex. Its greatest length is about 50 miles; its greatest breadth about 25 miles; its circumference about 130 miles. The area is 857 square miles, or 584,480 acres. The population, in 1841, was 164,459.

The whole of the northern part of the county, and much of the centre, are included in the large

tract of fenny land called the Bedford Level, in which the towns and villages are on spots which rise above the general level of the fens; and the churches crowning these slight elevations may be distinguished at a considerable distance. The southern part of the county has gently rising hills, with some wood in the parts bordering on Suffolk, but little in other places. The hills are few in number, and of no great altitude.

The chief river is the Nene, the lower part of which, within this county, divides into three branches, the Catswater, the Shire Drain, and the old Nene. The Nene is intimately connected with the great draining system of the county. The Ouse flows past St. Ives and Ely into Norfolk, and receives the Cam, the Lark, and a number of artificial cuts. The Cam rises in Essex, passes through Cambridge, and joins the Ouse near Ely. The Lark separates this county in part from Suffolk.

The canals are not numerous, except those which are connected with the drainage of the fens. There are navigable cuts from the Ouse to Soham, from Cambridge to Stortford, and from Great Shelford to Whaddon. The county is well supplied with good turnpike-roads, of which the Great North Road is the principal: it passes northward through the county from Royston. The Cambridgeshire railways sanctioned down to 1845 comprise lines radiating from Ely in five different directions, towards London, Norwich, Lynn, Peterborough, and Huntingdon, besides a short line from Cambridge to St. Ives. In 1846, lines from Chesterford to Newmarket, and from Wisbeach to St. Ives—and in 1847, lines from Cambridge to Bedford, from this line to Royston, and from Ely to Newmarket—were sanctioned.

Geological Character.—The south and south-eastern parts of the county are occupied by a part of the great chalk formation which extends, within the limits of Cambridgeshire, from Newmarket Heath to Royston: it forms the mass of the Gog-Magog hills, S.E. of Cambridge, and of the Royston Downs. There are also, in Cambridgeshire, two masses of this chalk detached from the principal mass, the Coach and Horses Hill, near Orwell, S.W. of Cambridge, and Madingley Hill, W. of Cambridge. The chalk of Cambridgeshire consists of two varieties, the upper containing an abundance of the common black flint, and the lower or gray chalk, which contains little or none. The upper chalk is found in the S.E. part of the county: the lower chalk forms the principal hills, and occupies the N.W. part of the chalk range. The chalk district of Cambridgeshire dips gently to the S.E. The chalk rests upon a blue clay, called in the county *galt*, which is considered as a variety of the chalk-marl formation that crops out from beneath the north-western boundary of the chalk. This formation extends to the boundary of Huntingdonshire and Bedfordshire; its thickness is variable, averaging perhaps 200 or 220 feet. It is nearly impervious to water. In a few places, along the irregular line which separates this county from the two just mentioned, the iron-sand, which underlies the galt, rises to the surface. It forms excellent garden-ground. Throughout

the whole of this formation many fragments of mineralised wood are found. The fenny district of this county is mostly comprehended in the Isle of Ely.

Agriculture, &c.—The soil of this county is extremely various, consisting of clay, loam, and chalk, both in the uplands and the fens. Although there are some poor commons and heaths, the greater part of the land is fertile. In some spots called white land, which have chalky subsoils, great crops of wheat and beans are raised. The Burwell wheat is in great request for seed in many parts of England, and the cheeses of Cottenham indicate considerable richness in the pastures. The climate in the uplands is mild and healthy; but in the fens, especially those which have not been thoroughly drained, agues and fevers prevail when the water has evaporated and left the land in a half-dry state. When the land is quite flooded, the air is less impregnated with unhealthy effluvia. In proportion as the fens are drained and the land is cultivated, the air becomes more healthy. The fen district is a dead flat intersected with ditches, canals, and sluggish streams. The soil consists of mud mixed with decayed and half-decayed vegetable matter. When the superfluous water has been removed, a soft spongy surface is left, which is much improved by burning. The ashes thus produced, on being mixed with the soil, greatly enrich it, and the most luxuriant crops are obtained without any other preparation.

The first operation on a newly inclosed fen, when it has been drained, is to pare, by means of a paring plough, the surface on which coarse grass and sedge are growing in a matted state. The sods are then burnt, and reduced to a carbonised mass, which, when cool, is spread over the ground. This is immediately ploughed in, and the land is sown with cole-seed or rape, of which an abundant crop is invariably produced. The cole is fed off with sheep, the land ploughed once, and oats are sown, which produce astonishing crops. This is succeeded by wheat, or sometimes by another crop of oats, in which are sown clover and grass seeds, which soon cover the ground with fine herbage. The land is left in grass as long as the grass is good. As soon as it begins to decline in quality or produce, it is ploughed up and sown with oats, or it is again pared and burnt as before. Or sometimes grain crops are taken before grass crops. The newly drained soil, being loose, requires pressing after sowing. Rape-cake is much used as manure. The uncultivated fens yield turf, reeds, and osiers.

In the uplands towards Hertfordshire and Suffolk, the land was formerly cultivated on the old three-field system; but the turnip husbandry is now very generally followed. In the rich white land, wheat and beans are sown alternately as long as the land is clean. Thin chalky lands have been made productive for pasture by the introduction of sainfoin. There are stiff heavy lands in Cambridgeshire, independently of the fens, which would be greatly benefited by judicious surface-draining. By this means, many soils now too wet to bear turnips, or to allow heavy cattle to be depastured upon them in spring or autumn, would become dry and sound, and a convertible system might be introduced.

Towns, &c. — Cambridgeshire returns seven members to the House of Commons, three for the county, two for the town of Cambridge, and two for the university of Cambridge. It is chiefly in the diocese of Ely.

The principal towns are the following:—

Cambridge, the county town. [CAMBRIDGE.]

Ely, a city, and seat of a bishop. [ELY.]

Linton is a market-town, 10 miles S.S.E. from Cambridge. It contains a spacious parish church. The population of the parish in 1841 was 1838.

March is a market-town, situated on both banks of the Nene, which is crossed by a bridge. The chapelry of March, which is in the parish of Doddington, contained in 1841 a population of 5706. The church is a spacious Gothic structure, and there is a commodious town-hall. The Wisbech branch of the Eastern Counties Railway extends from Ely through March to Wisbech.

Newmarket is chiefly in Suffolk, but the race-course is in Cambridgeshire. [NEWMARKET.]

Royston is partly in Cambridgeshire, but chiefly in Hertfordshire.

Soham is a large irregular town, 5½ miles S.S.E. from Ely. The church is spacious and handsome, with a lofty tower at the west end. The population of the parish in 1841 was 4091.

Thorney is a small town on an eminence rising out of the fens, 20 miles from Ely. It was formerly the site of an abbey, which was mitred and rich. The nave of the abbey church has been converted into the parish church. The west end is a fine specimen of Gothic architecture, though of mixed styles. The population of the parish in 1841 was 2159.

Whittlesey is 34 miles N.N.W. from Cambridge. The Peterborough branch of the Eastern Counties Railway passes by Whittlesey. It is included in two united parishes, the population of which in 1841 was 6874. There are two churches.

Wisbech, a municipal borough and port of entry, is situated chiefly on the eastern bank of the river Nene, 24 miles N. by W. from Ely. A stone bridge of one arch of 72 feet span connects the two parts of the town. The houses are tolerably good, the streets clean and lighted with gas, and a handsome circus occupies the space where the castle of Wisbech formerly stood. In dry weather the water is scanty and bad, the best being often rain-water collected in cisterns on the roofs of the houses. The town has a corn-exchange, town-hall, and house of correction. The parish church, dedicated to St. Peter and St. Paul, is a large and ancient structure, with two naves, two aisles, and two chancels. The New Chapel is a perpetual curacy. There are places of public worship for Baptists, Methodists, Independents, Unitarians, and Quakers. There is a free grammar-school, which has two scholarships in Magdalene College, Cambridge.

The navigation of the Nene to Wisbech had gradually become difficult and dangerous, from accumulation of mud and sand, but by cuts and

other works it has of late years been much improved. The number of registered vessels Jan. 1, 1847, was 101 (8,148 tons). The net-receipt of customs-duty for the year *ending* Jan. 5, 1847, was 13,530*l.* 2*s.* 10*d.* The principal trade is in *coals*, corn, and timber.

The municipal borough is divided into 2 wards, and is governed by 6 aldermen and 18 councillors. The population of the parishes of Wisbech St. Peter, and Wisbech St. Mary, with the chapelry of Guyhirn, in 1841, was 10,461.

There was formerly a castle at Wisbech, which was originally built by William I. It was destroyed by an inundation in 1236, but was afterwards rebuilt, and became the property of the bishops of Ely. No part of it remains.

History and Antiquities.—In the most remote period of British history Cambridgeshire appears to have been inhabited by the Icéni, whose territory comprehended also the counties of Norfolk and Suffolk.

Several British and Roman roads crossed this county. Roman antiquities of various kinds have been dug up at Cambridge, Soham, near Wisbech, and other places. The circular camp of Vandlebury on the Gog-Magog Hills; Arbury in the parish of Chesterton, near Cambridge; Willingham, on the edge of the fen; and the earth-works round the sites of Bourn Castle and Castle-Camps; are probably of British origin. There is a considerable round mound near the former site of Cambridge Castle. There are the remains of a Roman camp at Great Shelford, near Cambridge, a Roman embankment near Wisbech, and many ancient ditches.

In the wars between the Saxons and Danes this county suffered severely. In the contest between William the Conqueror and the Saxons, the Isle of Ely was greatly distinguished by the martial deeds of Hereward-le-Wake, who was however forced to submit in 1074. In the civil wars of Stephen and the Empress Maud, and in the contest between King John and the barons, this county again suffered very severely. In the troubles which marked the close of the reign of Henry III. the Isle was again the scene of contest. It was taken and fortified by the barons, who ravaged the county, and took and plundered Cambridge. The Isle was retaken by the king's son, afterwards Edward I., in 1266 and following years. During the civil wars of Charles I., this county was at first favourable to the king; but in 1643 Cromwell took possession of Cambridge, and the Earl of Manchester, being sent down, expelled the most eminent loyalists from the university: in 1645 Cromwell was again sent to secure the Isle of Ely. When the king was seized by Cornet Joyce in 1647, the parliamentary army was at Kennet, in this county, near Newmarket; but the king was conveyed by Cromwell's order to Childerley, near Cambridge, where Cromwell and Fairfax visited him. On the 9th of June in the same year the king was removed to Newmarket.

Of baronial castles this county has scarcely any remains, except of a castle in Cheveley Park and of another at Burwell, both near Newmarket; and earthworks, marking the site of castles, at Ely, Bourn (between Cambridge and Potton in Bedfordshire), and Castle-Camps, near Linton. Some old intrenchments at Swavesey, near St. Ives, called the Castle, are probably the remains of a mansion-house.

CAMBY'SES, the second king of the Medes and Persians, succeeded his father Cyrus B.C. 529. He led an army against Egypt (B.C. 525), defeated the Egyptian king Psammenitus, and reduced Egypt to the form of a Persian province. The ruin of many of the monuments of Egypt is attributed to the fury of the barbarian invaders, and of their king, who was mad. From Egypt Cambyses marched southwards against the Macrobian Ethiopians, but his army, after suffering severely in the deserts, returned to Thebes with much diminished numbers. A detachment of the Persian army which was sent from Thebes against the Ammonium (Siwah) was lost in the desert. After committing numberless extravagancies in Egypt, putting his brother Smerdis to death, marrying his sister, which was contrary to the Persian custom, and then killing her by a kick during her pregnancy, Cambyses died (B.C. 521) of an accidental wound from his own sword at Ecbátana, a town of Syria (not Ecbatana the capital of Media).

Compare with Herodotus (iii. 1., &c.) which is the authority for what is here stated, the account of Ctesias, *Persica*.

CAMDEN, WILLIAM, born in London, May 22, 1551. He was admitted into Christ's Hospital within a very few years after its establishment. He was afterwards in St. Paul's School, and finally removed to Oxford. He left the university in 1571, and became an under-master of Westminster School.

The most celebrated of his works is that entitled 'Britannia,' a survey of the British isles, written in elegant Latin. The first edition of this work was published in 1586. Many others appeared in his lifetime with enlargements. A singular fate has attended this book. A long succession of writers have made additions to it, till Camden's 'Britannia,' which as it came forth from him was but a single volume of no large dimensions, has been swelled out in the successive English editions till at length it has become four folio volumes, of which the principal compilers and editors were Bishop Gibson and Mr. Gough.

After the publication of this work, Camden began to be looked upon as one of the most distinguished scholars of his age. The prebend of Ilfracombe, belonging to the cathedral of Salisbury, was given to him, though a layman. He was made head-master of Westminster School in 1592, and Clarencieux King-at-Arms in 1597. His 'Annals' of the reign of Elizabeth is the next in celebrity to his 'Britannia.' His folio volume of the works of some of our old Latin chroniclers was printed at Frankfort in 1603.

Camden died Nov. 9, 1623, at Chiselhurst, in Kent. He founded an historical lecture in the University of Oxford, now called the Camden Professorship of History.

CAMDEN, CHARLES PRATT, EARL OF, was a younger son of Sir John Pratt, who was chief justice of the court of King's Bench in the

reign of George I. Charles Pratt was born in the year 1714. He went at an early age to Eton; and in 1731, having obtained the election to King's College, Cambridge, he removed to the university. He became a fellow in 1734; and in 1738 he was called to the bar. He went the western circuit for several years with little practice, and at one time he thought of leaving the bar for the church, but he was dissuaded from taking this step by Henley, afterwards Lord Chancellor Northington, who was at that time in considerable practice on the western circuit. His practice as a junior appears never to have been considerable; and previously to his appointment as attorney-general he had much less general practice in the courts of Westminster Hall than several other advocates. In June, 1757, Sir Robert Henley, the early friend of Pratt, was made lord keeper; and Lord Chatham, who had been with Pratt at Eton, insisted upon his being made attorney-general in the place of Henley. He was immediately afterwards returned to parliament for Downton, in Wiltshire. His official conduct as attorney-general appears to have been judicious and moderate. The only *ex-officio* information for libel filed by him was against Dr. Shebbeare for his 'Letter to the People of England;' of which Horne Tooke says (Howell's 'State Trials,' vol. xx. p. 708) 'that if ever there was an infamous libel against the government surely it was that.' In his speech upon the trial of the information, Pratt declared that 'he did not wish for the conviction of the defendant, if any man in the world could entertain a doubt of his guilt.'

On the death of Chief Justice Willes, in 1761, Pratt was appointed his successor in the court of Common Pleas. Soon after his elevation to the bench, the question respecting the legality of general warrants was raised, by the proceedings of government with relation to John Wilkes. Pratt expressed his opinion against the asserted power of the secretary of state to authorise arrests, or the seizure of papers upon general warrants. Addresses of thanks were voted to him by many of the principal towns; and the city of London placed his portrait in Guildhall, with an inscription in honour of the 'maintainer of English constitutional liberty.'

When the Rockingham administration came into power, in the summer of 1765, Pratt was raised to the peerage by the title of Baron Camden. Notwithstanding this, he made a vigorous opposition to one of the first measures introduced by them in the ensuing parliament, the resolution asserting the right of Great Britain to impose laws upon the American colonies in all cases whatsoever; by which resolution, and an act to be founded upon it, the government proposed to qualify the repeal of the obnoxious stamp act of the previous session. Lord Rockingham's administration broke up in July, 1766, and Lord Northington, being removed from the court of chancery, became president of the council. The seals were given to Lord Camden.

The Duke of Grafton's administration contained within itself the elements of its dissolution; and its fall was accelerated by the proceedings of the House of Commons relating to Wilkes, and the measures respecting America. Upon the opening of the session of 1770, Lord Camden declared in the House of Lords his opposition to government, and voted for Lord Chatham's amendment to the ministerial address. Such an act by the lord chancellor necessarily led to his removal from the woolsack.

Lord Camden's character as a judge in the court of chancery is thus described by a contemporary writer (Almon's 'Anecdotes,' i. p. 384). He expressed his meaning with great clearness, was polite in his behaviour, patient, and vigilant. His memory was ready and comprehensive.

During the remaining twenty-four years of his life, Lord Camden was entirely a political man. In the session of 1770 he was a strenuous opponent to Lord North's administration. The doctrine asserted by Lord Mansfield on the trials of Woodfall and Miller, that the jury, in cases of libel, were to decide upon the fact of publication only (a question which was not finally determined until the passing of Mr. Fox's libel act in 1792), was warmly reprobated by Lord Camden in the House of Lords. He also uniformly opposed the policy of Lord North respecting America. On the recall of Lord Rockingham and the Whigs to power in 1782, Lord Camden was appointed president of the council, but was displaced on the formation of the Coalition ministry in 1783. He strongly opposed the new ministry, and in the debate on Mr. Fox's India Bill in the House of Lords he made an eloquent speech against the measure. The fate of this bill put an end to the Coalition ministry; and soon after the formation of Mr. Pitt's administration, Lord Camden was reinstated in the office of president of the council, which he held for the remainder of his life. Though then upwards of seventy years of age, he continued his attendance in the House of Lords, and actively assisted in several important debates. Upon the mental derangement of George III. in 1788, he introduced the plan proposed by government for the establishment of a regency. In 1786 he was created Earl Camden. The last occasion upon which he took a part in the debates was upon the discussion of Mr. Fox's Libel Act, in 1792. The question of the province of juries in cases of libel had, during the whole of his life, deeply interested him; and on the introduction of this bill into the House of Lords he distinguished himself by the eloquence with which he maintained the principle which in his early years he had zealously supported.

Lord Camden died on the 13th of April, 1794, in the 80th year of his age.

(*Law Magazine* for February 1818.)

CAMEL, a genus of Ruminants without horns (*Gamel* of the Hebrews, *Djemal* of the Arabs, *Κάμηλος* of the Greeks, *Camélus* of the Latins, *Cammello* of the Italians, *Camello* of the Spaniards, *Kameel* of the Germans, and *Chameau* of the French).

In some respects, observes Cuvier, the camels approach the Pachydermata. They have not only canines in both jaws, but also two pointed teeth or incisors in the intermaxillary bone. The lower

incisors are six in number; and the molars twenty or eighteen,—characters which these animals alone, among the ruminants, exhibit. The dentition of the camel may be thus expressed:—

$$\text{Incisors, } \frac{2}{6}\text{; Canines, } \frac{1-1}{1-1}\text{; Molars, } \frac{6-6}{5-5} = 34.$$

Another difference between the camels and the other ruminants consists in the separation of the scaphoid and cuboid bones of the tarsus. For details of osteology, see Dr. W. Adam's Paper in 'Trans. Linn. Soc.' vol. xv.

Generic Character.—Lower incisors in the form of cutting wedges; upper incisors sublateral; canines conical, suberect, strong; false molars situated in the interdentary space on each side. Head long; upper lips cleft and mobile; eyes large, with a long-lashed upper eyelid as a protection; nostrils slit obliquely, and capable of being opened or closed at will; ears small; neck elongated. Back with fleshy bosses or hunches; tail moderate. Toes united by a callous pad below. Teats ventral, four in number. Hair inclining to be woolly. Callosities on the breast, and the joints of the limbs. General contour gaunt and angular. Limbs meagre.

The stomach of the camel is so constructed as to form a reservoir of water necessary to the wants of the animal during its long and toilsome journeys. The apparatus for receiving and retaining the water consists of an assemblage of cells in two compartments of the paunch, these cellular receptacles being apparently analogous to the reticulum of ordinary ruminants. The compartments are divided by a strong muscular ridge, and it is in the first compartment that the chief assemblage of tanks is found, those in the other being more superficial. It is impossible to give a clear verbal description of the bands and fasciculi of fibres, and the details involved in this structure and mode of arrangement, so as to render them intelligible, without large and elaborate drawings. We therefore refer to the Lectures on Comparative Anatomy, by Sir E. Home, who thus sums up the functional results of the complicated mechanism, which he describes at great length and very minutely. 'It is evident that the second cavity neither receives the solid food in the first instance, as in the bullock, nor does the food afterwards pass into the cavity or cellular structure. The food first passes into the first compartment of the first cavity, and that portion of it which lies in the recess, immediately below the entrance of the œsophagus, under which the cells are situated, is kept moist, and is readily returned into the mouth along the groove formed for that purpose, by the action of the strong muscle which surrounds this part of the stomach, so that the cellular portion of the first cavity in the camel performs the same office as the second in the ruminants with horns. While the camel is drinking, the action of the muscular band opens the orifice of the second cavity at the same time that it directs the water into it; and when the cells of that cavity are full the rest runs off into the cellular structure of the first cavity immediately below, and afterwards into the general cavity. It would appear that camels when accustomed to go journeys, in which they are kept for an unusual number of days without water, acquire the power of dilating the cells so as to make them contain a more than ordinary quantity as a supply for their journey; at least, such is the account given by those who have been in Egypt. When the cud has been chewed, it has to pass along the upper part of the second cavity before it can reach the third. How this is effected without its falling into the cellular portion could not, from any inspection of dried specimens, be ascertained; but when the recent stomach is accurately examined the mode in which this is managed becomes very obvious. At the time that the cud has to pass from the mouth, the muscular band contracts with so much force, that it not only opens the orifice of the second cavity, but acting on the mouth of the third brings it forward into the second, by which means the muscular ridges that separate the rows of cells are brought close together, so as to exclude these cavities from the canal through which the cud passes.'

The whole organisation of the camel proves its adaptation for the arid deserts over which it is destined to travel. The pads, or sole-cushions of the spreading feet, divided into two toes without being externally separated, which buoy up, as it were, the whole bulk with their expansive elasticity from sinking in the sand, on which the animal advances with silent step,—the nostrils so formed that the animal can close them at will, so as to exclude the drift sand and the parching simoom,—the beetling brow, and long lashes which fringe the upper lid, so as to screen the eyes from the glare of the sun,—the cleft prehensile upper lip, and the powerful upper incisor teeth, for browsing on the dry tough prickly shrubs of the desert,—the hunch acting as a reservoir of nutriment against a time of long abstinence,—and the assemblage of water tanks in the stomach,—these are all proofs of design.

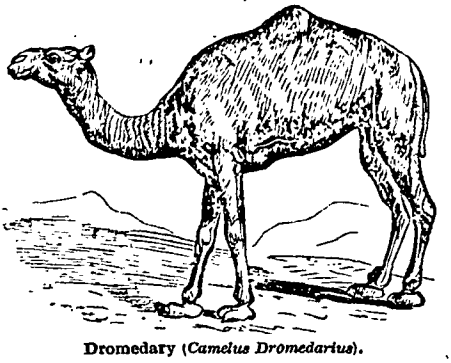
The genus *Camelus* contains two species, both in a state of bondage, and known to the ancients from the earliest antiquity.

1. The Bactrian Camel (*Camelus Bactrianus* Linn.). Two humps on the back; length about ten feet; hair shaggy, particularly under the throat; colour generally dark brown. This species is spread through Central Asia to China. Pallas states that very large camels, with two hunches, occur wild in the deserts of Shamo, towards the frontiers of China; but there is reason to believe that these are descendants of individuals liberated by the Calmucs on a principle of religion. Occasionally a Bactrian camel is to be seen in Egypt and Arabia, brought from some remote province.

The manners of the Bactrian camel resemble those of the Arabian, and its utility is as great. It is the patient, laborious, and willing slave of man, travelling over sandy deserts, and administering to the wants of a wandering people.

2. The Arabian Camel, or Dromedary (*Camelus dromedarius*, Linn.). One hump on the back; length about eight feet; hair generally brown. This species is spread through Egypt, Arabia, Syria, North Africa, Persia, India, &c., and its history is interwoven with that of the pa-

triarchs of old, nor is it now less important than in those early days. Caravans of camels still



Dromedary (*Camelus Dromedarius*).

traverse the desert, conveying merchandise. The load of a camel is from 500 to 600 lbs., and it will move at the rate of nearly 3 miles an hour, regularly as clock-work, day after day, for eight hours daily. It lies down, resting on the callosities of its breast and limbs, to be loaded and unloaded.

The senses of the camel are very acute; and it scents water at a great distance, hastening its pace to the well or fountain even when ready to drop from exhaustion.

It is on camels that the Orientals perform their pilgrimages. In these extraordinary journeys the camel sustains an important part. Without its services the pilgrimage could not indeed be accomplished. Some of the animals are loaded with water-skins, some with merchandise, others carry the food and necessaries of the pilgrims and their own provender, and others are mounted by riders. Travellers describe the cavalcade as imposing.

The camel is not only serviceable as a beast of burden; its milk and flesh are both in requisition, especially the former. Of its hair the Arab weaves clothing, and even tents; his belt and sandals are the produce of its hide; and the dung affords him fuel. From the soot, sublimated in closed vessels, is procured sal ammoniac, formerly imported into this country from Egypt. Camel's hair is imported into this country for the manufacture of pencils for the painter; that from Persia is the best. There are three qualities, black, red and gray; the black is most valuable, next the red; the gray is very inferior.

Besides the ordinary breed of slow camels, there is a light variety, termed *Maherry*, or *el Heirie*, in the Arabian desert, and *Sabayee* in Northern Africa. It is principally used for journeys of despatch, carrying a single rider, or only a very light burden. This swift breed is of great antiquity, and is referred to in several passages of the scriptures (Esth. viii. 10, and 1 Sam. xxx. 17).

The Arabian Camel was introduced by the Moors into Spain, but the breed has been allowed to become extinct. A few camels are still kept, we believe, at Pisa in Italy, but when the stock was introduced is not very clear, probably about the middle of the 17th century. The stud belonged to the Tuscan government, and in 1810 numbered 170 individuals at San Rossora. We do not know what number is at present maintained.

Fossil Camels.—The fossil remains of a camel have been found in the Sub-Himalayan range, by Captain Cautley.

CAMELFORD. [CORNWALL.]

CAMELI'NA, a genus of plants belonging to the natural order *Cruciferæ*. *C. sativa*, Gold of Pleasure, has small yellow flowers. Its name is a burlesque on the humble appearance of the plant. Babington admits it into his British Flora, but it is undoubtedly a foreign plant, which has been introduced with the seed of flax. *C. dentata* is another species frequently found in Great Britain, in company with the last, and introduced in the same way.

CAME'LLIA, a genus of greenhouse shrubs belonging to the natural order *Ternstromiaceæ*, and nearly related to the plants which yield the tea of the shops. All the species are natives of China and Japan, or of corresponding climates in the north of India, whence they have been introduced into Europe. *C. Japonica*, a species with broad shining leaves and red flowers, is the origin of the numerous beautiful varieties now so common in gardens. The principal part of these have been raised by the skill of the Chinese or Japanese, and are remarkable, not only for their gay colours, but for the great symmetry with which their petals are arranged, the flowers, when seen in perfection, resembling nothing so much as beautiful shell-work. The sorts that have been raised in this country are in most instances inferior to the Chinese in symmetry, but they occasionally surpass them in richness of colour. Camellias succeed best when treated as conservatory plants, that is, when planted in the open border under glass, and just protected from the frost, especially if they are freely exposed to light and air. They then grow into large evergreen bushes, covered with a dense foliage, upon which their gaudy flowers are beautifully relieved, and are far handsomer objects than when their roots are confined within the narrow compass of a garden-pot. Many of the varieties are nearly hardy, that is, they can bear the ordinary winters of England almost without protection, but they are so very inferior to the conservatory specimens as to be little worth the having as out-of-doors shrubs, unless upon our south-west coast, in some of the warm bays of Devonshire and Cornwall. They are multiplied by cuttings, grafts, and buds, and also by seeds, which the Waratah and some single sorts produce in plenty.

CAMELOPARD. [GIRAFFE.]

CAMELOPA'RDALUS, the Camelopard or Giraffe, a constellation formed by Hevelius. A line drawn from Capella to the pole-star passes right through the body of the constellation: the hind part precedes in right ascension, of which the whole ranges from four to eight hours.

CAMEO, or CAMAIEU, in the language of art, is a term usually applied to gems or stones that are worked in *rilievo*. Strictly speaking, it

refers to such stones only as have strata or grounds of different colours.

The art of engraving on stone is of high antiquity; but it was for the most part confined to *intaglio*, or indenting. It has been supposed that the Etruscans had the art of engraving hard stones before it was known to the Greeks. Many engraved stones, however, that are called Etruscan, are doubtless early Greek, as may be inferred from their subjects.

The earliest Greek artist mentioned as an engraver of stones is Theodórus of Samos. (Herodotus, iii. 41.) Pyrgóteles, who lived in the time of Alexander the Great, was distinguished in this branch of art. The age of Augustus is remarkable for the excellence of the gem-engravers who were then living. One of the finest cameï preserved in the collections of Europe is the Apotheósis of Augustus, in the collection at Vienna. In the French collection, the sardonyx of Tiberius is one of the best known. We possess in this country some cameï of first-rate excellence, but they are chiefly in private collections.

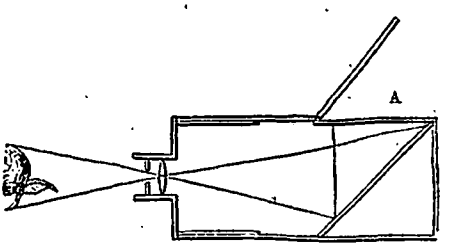
The workers in cameo not only exercised their skill in the cutting or engraving, but also in so arranging their subject and the composition of its details as to make the different colours or zones of the stones answer for parts of the design. The ancients were so partial to this variously coloured work, that they even imitated the material in glass; and we possess in this country one of the most beautiful specimens of their ability, in the Barberini Vase, or, as it is commonly called, the Portland Vase, now in the British Museum.

At the decline of the Roman Empire, gem-engraving fell with the other arts; and it was not till a late period that the taste and munificence of the Florentine family of Medici caused its revival in Italy. It was much encouraged in the fifteenth century, and the sixteenth century can also boast of several very distinguished artists in this class. In the succeeding century there was a considerable falling off, but in the eighteenth the art again rose. The practice of working cameï on shells (*conchylie*) is of comparatively modern introduction in Italy; but it is now carried to a great extent, in Rome particularly.

CA'MERA LU'CIDA and CAMERA OBSCU'RA (the light and dark chamber), a name given to two methods, very like in principle, of throwing images of external objects upon a plane or curved surface, for the purpose of drawing or amusement. In the first contrivance there is no *chamber*; but as it was the last invented, and as its predecessor had been called *camera obscura*, it was called *camera lucida*.

The earliest description of the camera obscura is in the seventeenth book of the 'Magia Naturalis' of John Baptista Porta, who directs to make a small aperture in the shutter of a perfectly dark room, and to let the light fall upon a white screen or wall: he afterwards placed a convex lens in the aperture; and it is evident that with or without the lens inverted images of the object will be formed.

The *Camera Obscura* now in use has, occasionally, the form of a box as in the subjoined cut,

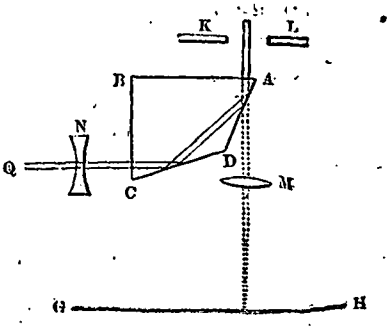


which may represent a longitudinal section of one. In front is a sliding tube, carrying a convex lens, through which the light from distant objects passes to a mirror at the opposite extremity of the box: the mirror is inclined to the horizon at an angle of 45 degrees, and from thence the light is reflected upwards to a glass plate A in a horizontal position. The rays in the pencils converge at the upper surface of this plate, which, on that surface only, is ground rough, and thus the images of distant objects are visible upon it, a shade over the plate preventing the direct light from interfering with them.

A camera obscura for exhibition is generally made in a room with a conical roof and an aperture at the top. Above this aperture is a revolving plane mirror inclined at 45°, and reflecting pencils downwards. A convex lens causes these pencils to converge upon a surface of plaster of Paris, properly curved. The mirror revolves about a vertical axis, thus allowing all the compass-points of a landscape to be successively thrown on the surface.

Portable camera obscuras are often made in a similar manner, the mirror and lens being in a sliding case at the top of a pyramidal box, and the image being received on paper laid at the bottom. Apertures on one side of the box allow the spectator to see the image and introduce a hand for the purpose of drawing on the paper.

The *Camera Lucida* was invented by Dr. Wollaston, and consists of a metal stand supporting a glass prism, of which let ADOB be a section, the



angle ADO being 135 degrees. Imagine pencils of rays from distant objects (these being represented by Q), after passing through the surface at BO, to fall on the surface CD at an angle of 22½ degrees nearly; then, by a principle in optics, the rays will be reflected to the surface AD, and from

thence to the eye through an opening KL, which excludes all except the end of the prism at A, and a part of the sheet of paper or other flat surface GH. Hence the image of Q is thrown towards the visible part of the paper, and, the eye viewing both the image and the sheet of paper (with different parts of the pupil however which creates a difficulty in using this instrument), the observer is enabled to trace the object upon the paper.

The image of the distant object must be made to coincide with that of the paper at GH; and, for this purpose, since, except when Q is very remote, the rays in the pencils issuing at A are in a divergent state, a convex lens is interposed at M. If the observer is short-sighted, he may either place a concave lens at N instead of the lens at M, or, which is better, he may retain this lens, and use spectacles with concave eye-glasses.

(Sir D. Brewster's *Optics*, in *Cabinet Cyclopædia*; Coddington's *Optical Instruments*.)

CAMERA'RIUS, JOACHIM, was born at Bamberg in 1500, studied at Leipzig, and became a friend of Melanchthon and other reformers. The Duke of Würtemberg gave him the direction of the new University of Tübingen. In 1541 he was charged by Henry, Duke of Saxony, with reforming the University of Leipzig, of which he was appointed rector. In 1568 the Emperor Maximilian called him to Vienna to consult him about some important state-affairs. He died at Leipzig in April 1574. Camerarius was one of the most distinguished scholars of the age of the Reformation, and the author of numerous works, among which is a Life of Melanchthon. His 'Epistolæ,' or Correspondence, were published after his death by his second son, Joachim, in two vols., Frankfort, 1583-95. Joachim was a distinguished physician, and left several works on medicine and botany.

CAMERONIANS, a religious body, so called from the Rev. Richard Cameron, a non-conformist preacher. They are sometimes also called 'Covenanters,' from their adherence to the national covenant of Scotland, and the solemn league and covenant of the three kingdoms. Their proper designation however is that of 'Reformed Presbyterians,' or, particularly in Scotland where they had their origin, 'Old Presbyterian Dissenters.'

It was at the Revolution that this little shoot sprung from the great branch of Calvinist reformers. The arbitrary measures of the crown, which led to that important change, roused into activity a spirit of liberty which thrilled through every part of the religious community. Among others Cameron asserted with great freedom and boldness the independence of the church. On the 22nd June, 1680, in company with about twenty other persons, he entered the town of Sanquhar, in Dumfriesshire, and there made a public declaration, that 'Charles Stuart (meaning Charles I.) had by his perjuries in the breach of his covenanted vows, his tyrannical government, and his usurpation over their civil and religious liberties, dissolved their allegiance, and forfeited all right and title to the crown.' The party kept together in arms for a month; but at length, on the 20th July, while lying at Airdsmoss in Kyle, they were surprised by a body of horse and foot under the direction of the government, and in the skirmish which followed Cameron was killed, and his followers were dispersed or taken prisoners. The Covenanters published their testimony at Lanark in 1682, against the Test of 1681, adhering to and confirming the Sanquhar declaration, and giving reasons at length for their disowning the king's authority. This they again did in their Apologetic Declaration of October 28, 1684, and on the accession of James, Duke of York, to the throne, they published another declaration at Sanquhar, May 28, 1685, wherein they renewed their previous declarations. In these circumstances, it is plain that the Revolution was an event which they would hail in common with the other Presbyterians; but the latter acquiesced in arrangements with the government into which the Covenanters refused to enter, and they have since continued to testify against the Revolution settlement, as they now also do against the Articles of Union, the Toleration Acts, the conduct of the church, and generally all association whether of church or state with those who do not adopt the principles of Scripture, the Reformation, and the covenant.

They hold the Holy Scriptures to be the absolute rule of faith and conduct, and to contain the standard of these both in church and state. Next to this they adopt the early standards of the church of Scotland, the Westminster Confession of Faith, the larger and shorter catechisms of the Church, the books of discipline, and the Westminster Directory for Public Worship. And, lastly, they regard the national Covenant of Scotland as a continuing obligation. The religious body we are now considering was formed into a presbytery in 1743, under the title of the Reform Presbytery.

CAMILLUS, MARCUS FURIUS, lived about the middle of the fourth century after the foundation of Rome. There is so much of the fabulous in his history that one may reasonably suppose that Livy and Plutarch derived the traditions respecting him from some old poem. (Niebuhr, 'Roman History,' vol. ii. p. 472.) But Niebuhr has not attempted to deny him the personality which he is unwilling to concede to Romulus and others. Camillus was created dictator five times, and triumphed four times, but was never consul. His first dictatorship was in the 10th year of the siege of Veii, which was taken by him probably by means of a mine, by which part of the wall was overthrown. (Niebuhr, 'Roman History,' ii. p. 481, who has refuted the ordinary tradition.) He also conquered the Faliscans, who, according to the legend, yielded unconditionally to him in consequence of his generosity in restoring to them their children, whom a traitorous schoolmaster had delivered into his hands. (Plutarch, 'Camill.' x.) He was impeached, in A.U.C. 364, on a charge of peculation in the distribution of the plunder of Veii, and his guilt was so manifest that even his own clients could not acquit him. (Liv. v. 32.) Camillus retired to Ardea, and lived there till the battle of the Allia and the capture of Rome by the Gauls: he then led the Ardeates against the Gauls, over whom he obtained some

advantages. At length the Romans restored him to his civic rights by an ordinance of the plebs passed at Veii, and after two battles, the one fought in the city and the other on the road to Gabii, he completely exterminated the Gallic army. He died of the plague in the year of Rome 390.

CAMOENS. DOM LUIS DE CAMOËS is supposed to have been born at Lisbon. The year of his birth is uncertain. According to some it was 1547, while most biographers suppose it to have been 1524.

Camoens was sent to the University of Coimbra, where it appears from his works that he must have acquired the substance, as well as caught the spirit, of classical learning. On quitting the university, Camoens returned to Lisbon, and distinguished himself by some poetical productions; but to be at once a hero and a poet was his ambition. He joined, as a volunteer, an expedition which John III. was then fitting out against the Moors of Ceuta, and greatly distinguished himself in several encounters, in one of which he lost his right eye. On his return to Lisbon, no friend seconded his efforts at court to gain an honourable competence, and, baffled in all his expectations, he embarked in 1553 for India, in the hope of better prospects. He arrived at Goa, and joined a Portuguese expedition which was ready to sail in aid of the king of Cochin against the king of Pimenta. After serving in another expedition to the Red Sea, against the Arabian corsairs, he was banished to the island of Macao, in consequence of having exposed, in his 'Disparates na India' (Follies in India), some of the proceedings of the Portuguese authorities at Goa. He received permission from a new viceroy to return to Goa, but he had not long enjoyed repose when another viceroy threw him again into prison. A poem at once witty and affecting, which he addressed to the viceroy, at length procured his liberation. Finally Camoëns, after an absence of nearly sixteen years, arrived in 1569 at Lisbon, in the most abject poverty, his poems being the only treasure and last hope which he had brought from the shores of India. More ill-fated still at the end of his career, he found his native city afflicted with the plague, and during such a calamity poetry could avail him still less than ever. King Dom Sebastian was then concerting the plan of his unfortunate expedition to Maroeco, and this induced Camoens to dedicate his poem of the 'Lusiad' to the youthful monarch. Although the dedication was graciously received, it was only rewarded with a wretched pension, not sufficient to relieve the misery of its author. It appears that Cardinal Henry, who succeeded Sebastian, withdrew that small pension.

The fate of Camoens throws great light on the history of his country, and appears strictly connected with it. The same ignorance, and the same degenerate spirit, which suffered Camoens to starve, and finally to die most wretchedly in an hospital, sank Portugal into the most abject vassalage ever experienced by a conquered nation. While the grandees of Portugal were blind to the ruin which impended over them, Camoens beheld it with a pungency of grief which hastened his death in 1579.

Camoens attempted every style of poetic composition of which he had formed a definite idea; but the 'Lusiad' rises so far above his other works, that all his numerous but lesser compositions must be considered as inferior scions sprung from the same root. The title of the work, 'Os Lusiadas' (the Lusitanians), denotes the nature of the subject. An epic grouping of the most important events in the Portuguese annals forms the groundwork of the poem, which, designated as a whole, may be termed an epic national picture of Portuguese glory. The 'Lusiad' has been translated into English by Mickle, 2 vols. 8vo.

Camoens has left, besides the 'Lusiad,' specimens of no common merit in every style of poetry written in Portugal in his time; 301 of his sonnets which have been preserved exhibit his prolific fancy, and some of them all the tenderness and grace of Petrarch. He wrote also 17 canҫaos (songs), 12 odes, and 21 elegies. Among the miscellaneous poems of Camoens, the eclogues occupy a considerable space. They have more the form than the spirit of pastoral poetry. Passages in Spanish are occasionally interspersed with the Portuguese. Finally, to leave no kind of poetical composition unattempted, he wrote (probably previous to his departure for India) three dramas: 'El Rey Seleuco' (King Seleucus), 'Os Amphitryões' (The Amphitryons), and 'Filodemo.' Had the genius which animates the 'Lusiad' taken a dramatic direction, Camoens would have been the Calderon of Portugal before a Lope de Vega had arisen in Spain.

A very good edition of the works of Camoens appeared at Lisbon in 1779–80, under the title of 'Obras de Camoens, Principe dos Poetas de Hespanha,' 4 tom. 12mo. A second edition also appeared in 1782–83, in five small volumes, the first of which contains the life of the author and the 'Lusiad,' and the last the dramatic and other pieces ascribed to Camoens.

CAMOMILE. [ANTHEMIS.]

CAMOUFLET, or STIFLER, in military mining, is a small charge of powder sunk in the wall of earth between two parallel galleries, in order, by blowing the earth into one of them, to suffocate or cut off the retreat of the miner who is at work in it.

CAMP. [ENCAMPMENT.]

CAMP, ROMAN. The most complete description which we have of a Roman camp may be found in Polybius, who has in the sixth book of his 'History' given a good account of the military tactics of the Romans. He lived at a time when the institutions of the republic were in their full vigour, and his opportunities of acquiring information were ample.

When a place suitable for a camp had been chosen, the first thing was to fix a standard on the spot judged to be most suitable for overlooking the army when encamped, and sending commands to the different quarters. About this spot, within a space of 200 feet each way, was the prætorium or place of the general's quarters, on one side of which was the forum, and on the other the space allotted to the stores of the army, with the quarters of the Quæstor, or officer who

had charge of the military chest. Further, towards the right and left were the cavalry and infantry, forming the general's body-guard, and the volunteers in his service. This line, which in length may be estimated at 1650 feet, constituted the breadth of the camp. In front of the line were the tents of the legionary tribunes and of those officers among the allies who had corresponding rank.

Before the tribunes' tents was the principal street, 100 feet wide, stretching across the camp; and beyond this, extending about 1050 feet towards the front, were the quarters of the soldiers. These were divided into two parts by a street 50 feet wide, which ran from the prætorium to the head of the camp. On each side of this street were posted the Roman cavalry, and on their exterior the Triarii, one of the divisions of the legionary infantry. A street parallel to the former, and 50 feet wide, separated the tents of the Triarii from those of the Principes and Hastati, the other divisions of that infantry; and another street of equal breadth divided the legionary troops from the cavalry and infantry of the allies: these last constituted the two wings of the army. Behind the prætorium was a street 100 feet wide, extending the whole breadth of the camp; and beyond this, towards the rear, were the quarters of the 'extraordinary cavalry' and 'extraordinary infantry' of the allies. On the flanks of these troops were quarters for any foreigners or reinforcements of allied troops.

Such was the order of encampment for a consular army, consisting of two legions besides the allies; its whole depth might be about 1700 feet; and there was round the encampment a clear interval 200 feet broad, between the tents and the entrenchments. These consisted of a rampart (*vallum*) and a ditch (*fossa*), through which were four gates or entrances: the Prætorian gate (*Porta Prætoria*), in front of the camp, opposite the *Prætorium*; the Decuman gate (*Porta Decumana*), at the back of the camp; and a gate at each end of the *Principia* or principal street.

If two consular armies were united, the camp formed an oblong square, and resembled two camps placed back to back, without any intervening intrenchment. It appears to have had six gates, two prætorian and four others, one at each end of the two principal streets or passages.

The vallum was composed usually of earth or turf, sometimes of stones or wood, and was surmounted by a palisade. The ditch was on the outside. In stations which were designed to be permanent, and which were in a disturbed or hostile country, the works were constructed with unusual care, and there are many remains of them in different parts of Great Britain.

The Roman camps were of different kinds: besides the summer and winter encampments (*castra æstiva et liberna*), some were formed to protect the army only for a short time, and others were occupied as winter-quarters for the troops. The difference between them consisted chiefly in their size and in the strength of the fortifications. On plains the Roman camps were almost invariably rectangular, but on hills the vallum was adapted to the outline of the ground.

(Polybius, book vi. 27; General Roy's *Military Antiquities of the Romans in Britain.*)

CAMPA'GNA DI RO'MA, the most southern division of the Papal State, is bounded N.W. by the Tiber, N. by the Teverone or Anio, E. by the Apennines, and W. by the Mediterranean. The length of the province from Ostia to Terracina is about 62 miles, and its greatest breadth 45 from the Apennines to the sea. It is divided into two regions, the lowlands and the highlands, including the valley of the Sacco and part of that of the Teverone. The highlands are situated in various parts of the province, and exhibit great diversity of feature and fertility. There are among them a few summits from 2000 to 4000 feet in height. The lowlands of the Tiber, which form what is called l'Agro Romano, or the territory of the city of Rome, contain about 450,000 English acres, about half of which is arable, and a small portion marshy. The great plain between the south slope of the Monti Lepini and the sea, which is known by the name of the Pomptine Marshes, extends from Torre Trè Ponti to Terracina, a length of about 22 miles, by 10 of breadth. Of this extent only the lower tract is really marshy. Of the whole extent of the marshy ground, one-third is susceptible of cultivation; another third is in pasture, and the rest forest or marsh. The extent of the province of Campagna, including that part of the territory or jurisdiction of Rome which lies on the left or east bank of the Tiber, is calculated at 2266 square miles, of which about one-half is unwholesome, and only inhabited by a permanent population of about 15,000. The whole province contains 259,800 inhabitants, exclusive of the city of Rome.

This province is now divided into two administrative jurisdictions, namely, the Delegation of Frosinone and Pontecarvo, and the Comarca of Rome. The towns of the Delegation of Frosinone are—Frosinone, the ancient Frúsino, a town of the Volsci, afterwards a Roman colony, built on a hill in the midst of a well-cultivated country, and has 7000 inhabitants. Ferentino has 6700 inhabitants. Alatri, built on a steep hill, has 8000 inhabitants. On the top of the hill are the remains of an acropolis, the wall of which is 12 feet thick, and in some places 50 feet high, formed of large stones well fitted together without cement. Veroli, a bishop's see, is built on a mountain, and has 7000 inhabitants. [ANAGNI.] Ceccano has 4500 inhabitants; Ceprano, on the Liris, 2500; Banco, 3800; Monte San Giovanni, 3500. Segni, the ancient Signia, built on the ridge of the Lepini, with Cyclopian walls of four miles in extent and seven gates, has 35000 inhabitants. Paliano has 3000 inhabitants. All these towns, besides several smaller, are situated not far from each other in or near the valley of the Sacco. On the southern slope of the Monti Lepini, looking towards the Pomptine Marshes, are Piperno, the ancient Privernum, with 3600 inhabitants; Sezze (Setia), with 5300; Cori, with remains of a temple of Hercules, Cyclopian walls, and 4300 inhabitants: Sermoneta, with 2000; Norma, the

ancient Norba, with 1500; and Terracina. [TERRACINA.] Pontecorvo, in the valley of the Liris, has 6500 inhabitants and a cathedral. The Comarca or territory of Rome has, besides the capital, the towns of—TIVOLI; Subiaco, with 4800 inhabitants; PALESTRINA; FRASCATI; Albano, with 5000 inhabitants; Genzano, with 4000; Velletri, the ancient Velitræ, with some fine palaces and fountains, and 10,000 inhabitants; La Riccia (Aricia). Nettuno, on the sea-coast, Ardea, Civita Lavinia (Lanuvium), Torre Paterno (Laurentum), and Ostia, are all decayed places, with historical names and recollections.

The name Campagna di Roma was adopted, in the middle ages, to distinguish the country from the neighbouring Campania, or Campagna Felice, in the kingdom of Naples. The depopulation of the Campagna of Rome is often, though most erroneously, attributed to papal misgovernment; it is an historical fact that it was nearly as desolate in the time of Cicero as it is now. The depopulation of the country dates from the early conquest by Rome of the various people who inhabited Latium; the long obstinate resistance of the latter, and especially of the Volsci, in consequence of which most of their towns were destroyed; the subsequent devastations by Sulla; and the custom of the Roman patricians to abandon their vast estates to the cultivation of slaves and the care of overseers. For many ages the lowlands of the Campagna were almost deserted; but many of the popes have striven to bring them into cultivation. Those provinces of the Papal State which enjoy a more salubrious atmosphere, such as Umbria, Perugia, the valley of Rieti in Sabina, and the Marches, are among the finest, most populous, and best cultivated in all Italy.

The cultivation of the plains of the Campagna is peculiar. The farms are very large. Some hundreds of labourers are engaged every year from the highlands for the service of one farm, between the months of October and June, and double the number at harvest time, after which they return to their hills, or come to the hospitals of Rome with the malaria fever. Many come 60 or 80 miles' distance. During the summer months only a small number of permanent servants remain on the farms. This system of farming on a large scale is rendered necessary by the malarin, and the consequent depopulation of the plains. In the highlands and valleys of the Apennines property is much more subdivided, the farms are of moderate size, and most of the villagers have gardens and orchards or vineyards.

(Tournon; Nicolai; Gell; Calindri; Neigebaur; Châteauvieux; *Foreign Quarterly Review*, 1833.)

CAMPAN. [PYRENE'ES, HAUTES.]

CAMPA'N, MADAME, the daughter of M. Genet, a French officer, was born about 1750. In 1770, she married M. Campan, and was soon after appointed first lady of the bedchamber to Marie Antoinette, then dauphiness. She remained with her during her husband's reign, and was with her in the first scenes of the Revolution. Being forbidden to follow her mistress to her prison in the Temple, she opened a boarding-school at St. Germain-en-Laye. In 1806, when Napoleon founded the establishment at Ecouen for the daughters and sisters of the officers of the Legion of Honour, he appointed Madame Campan to superintend it. After the restoration, the school of Ecouen being suppressed, Madame Campan retired to Mantes, where she died in March 1822. She wrote 'Mémoires sur la Vie Privée de Marie Antoinette, Reine de France, suivis de Souvenirs et Anecdotes Historiques sur les Règnes de Louis XV. et Louis XVI.'

CAMPANELLA, TOMMA'SO, born near the town of Stilo in Calabria, in 1568, entered the Dominican order and became distinguished for his learning. He applied himself chiefly to metaphysics, and opposed what was then taught under the name of Aristotelian philosophy. Campanella published his first work at Naples, in 1591, entitled 'Philosophia Sensibus demonstrata, adversus eos qui proprio arbitratu, non autem sensata duce natura, philosophati sunt, cum vera Defensione Bernardi Telesii.' The schoolmen, and the monks especially, raised such a storm against Campanella, that he left his native country. He went to Tuscany, Padua, and afterwards to Rome, and during this period he wrote several works. From Rome Campanella returned to his native country, where he lived for some time at Stilo, but was there accused of having engaged in and fomented a vast conspiracy against the Spanish vice-regal government. For this imputed offence Campanella and Dionisio Ponzio, a brother friar, were arrested, together with many more, and sent to Naples, where several of the conspirators, having confessed under torture, were executed. Campanella remained in a dungeon for years, was repeatedly tortured, but confessed nothing, or had nothing to confess, and after several years his confinement was mitigated, and he was allowed to see his friends. At last, in 1626, he was released from his prison at the request of Pope Urban VIII., who urged that, as the prisoner had been charged with heresy and was moreover an ecclesiastic, he ought to appear before the tribunal of the Inquisition. Campanella was therefore sent to Rome, where however he was a prisoner at large, and was treated with considerate attention. After three years more, making in all thirty years of confinement, he was allowed his full freedom. He remained for several years at Rome, enjoying the favour of the pope, of many of the cardinals, and other distinguished persons.

Campanella had become very intimate at Rome with the Duke de Nouilles, ambassador of Louis XIII.; and this intimacy, added to the old suspicions of the agents of Spain, made them cry aloud against the protection granted by the pope to a turbulent friar, whom they compared to Luther. Campanella stood evidently in danger, even in the midst of Rome. So great was then the dread of the Spanish power in Italy, that the pope's protection was deemed insufficient. He therefore retired to Paris in 1634, where he had a very favourable reception from Richelieu, who introduced him to Louis XIII., who granted him a pension. Campanella, worn out by his sufferings, retired to the convent of his order, the afterwards famous Convent of the Jacobins in the Rue St. Honoré, where he died, in 1639.

The works of Campanella are very numerous. The most remarkable is 'De Monarchia Hispanica Discursus,' Amsterdam, 1640, which was written by him during his confinement at Naples. It is an able sketch of the political world of that time, and with reference to the Spanish monarchy, which was then the preponderating power, it showed how that preponderance could be maintained and increased. This work made great noise at the time; it was reprinted several times, and was translated into English, and published during Cromwell's Protectorate, London, 1654, with a preface by the translator, giving a notice of Campanella's adventures. The work was reprinted after the Restoration, under another title, with a preface by William Prynne of Lincoln's Inn.

Ernest Solemon Cipriani wrote a biography of Campanella, Amsterdam, 1705. Brucker and Buhle, in their histories of Philosophy, give an abstract of Campanella's philosophy. Some short Italian poems of Campanella were published not long ago at Lugano, by Orelli. Adami published some of his Latin poems.

(Baldacchini, *Vita e Filosofia di T. Campanella*, Naples, 1840, with several inedited letters of Campanella; Tiraboschi, *Storia della Letteratura Italiana.*)

CAMPANI, MATTHEW and JOSEPH, two brothers, natives of the diocese of Spoleto, were alive in and after 1678. Matthew, the elder, is principally known as having been the first who ground object-glasses of enormous focal length. By order of Louis XIV. he made one of a focal length of 130, one of 150, and one of 205 palms (9¼ inches French, according to Auzout); and with one of these Dominic Cassini first saw the satellites of Saturn. Joseph Campani was also an astronomer, and made his own telescopes. He published various observations (Lalande, 'Bibl. Astron.'), and is the one referred to in AUZOUT.

CAMPA'NIA, the Roman name of that part of the present kingdom of Naples which is now called Terra di Lavóro. The word Campania is probably derived from campus, 'a plain,' an etymology which Pliny (iii. 5) also assigns to the city of Capua. The Liris was the boundary between Campania and Latium. Campania is chiefly a plain inclosed between the sea and the mountains, which form a semicircular sweep from the mouth of the Liris to the promontory of Minerva. It was celebrated for its extraordinary fertility and its genial climate. The Osci, or Opici, and Ausones (probably all one people), are the first inhabitants of Campania recorded in history. Etruscan colonies afterwards spread to this country, and founded twelve cities, including Capua, which became the principal city of Campania. The Etruscans were driven out or conquered by the Samnites, who finally yielded to the Romans.

The district belonging to Capua was called Campanus Ager, and this restricted and original meaning of the term should not be confounded with the subsequent enlarged meaning of the term Campania, as used by Strabo for instance. The Campanians of Capua, after being allies of Rome, took the part of Hannibal, and were severely treated by the Romans in consequence. [CAPUA; TERRA DI LAVORO.]

CAMPANI'LE, an Italian term signifying a tower for bells. The word is derived from *campána* 'a bell.' Many of the Italian churches have these towers or campanili separated from the body of the church. Among the most remarkable are those of Cremona, Florence, Ravenna, Padua, Bologna, and Pisa. The leaning tower at Pisa is 150 feet high, and 13 feet out of the perpendicular. The campanile of Cremona is the highest in Italy, having an elevation of 395 feet. The campanile of Florence, which is 267 feet high, was constructed by Giotto in 1324, and is considered the most elegant campanile in Italy. The façade of the tower is in the Gothic style, mixed with somewhat of the Italian taste in architecture, which soon after prevailed over the Gothic. The cathedral at Seville has a fine campanile 350 feet high, which was built in 1568 by Guever the Moor.

CAMPA'NULA (diminutive of *campána*, a 'bell,' on account of the form of its flowers), a genus of plants, the type of the natural order *Campanulaceæ*. The older names of the genus Campanula are *Trachelium* and *Cervicaria*, names which were given to it on account of the supposed efficacy of many of the species in the cure of disorders of the neck and trachea. Hence also the common name Throatwort. All the species are herbaceous, with mostly perennial roots, and the radical leaves differing in form from those of the stem. They are natives of the northern hemisphere.

C. edúlis is a native of Arabia Felix. Its root is thick and sapid, and contains a considerable quantity of starch. It is on this account frequently eaten by children, as are the roots of many other species. *C. trachelium*, Nettle-leaved Bell-Flower, is a European species. It is found in the south of England, and has large blue bell-shaped flowers. *C. rotundifolia*, Hare-bell, Blue-bells, Milkwort, has pretty blue flowers and is a favourite throughout Europe. The juice of the flowers makes a very good blue ink, and when mixed with alum a green one. The roots of this species also may be eaten. *C. pyramidalis* is indigenous on rocks and walls in Carinthia, Carniola, and Dalmatia. From its having been a great favourite in the gardens of Europe, it has now become naturalised in many places where it was not originally a native. It has not often been found wild in Great Britain, though it is commonly cultivated for the sake of its tall raceme of beautiful blue flowers. *C. rapunculus*, Rampion, is a native of Morocco and Barbary, also of the south of Europe, and extends as far north as Norfolk in England. It is much cultivated in France and Italy, and sometimes in Britain, for the sake of the roots, which are boiled tender, and eaten hot with sauce, or cold with vinegar and pepper.

Other British species, found on dry mountain pastures, are *C. latifolia*, great Bell-Flower, common in the north; *C. rapunculoides*, very rare; *C. glomerata* and *C. patula*, frequent in hedges and thickets.

(Loudon, *Encyclopædia of Plants*; Koch, *Flora Germanica*; Babington, *Manual of British Botany*; Bunnett, *Outlines*; Don, *Gardener's Dictionary.*)

CAMPANULA'CEÆ, a natural order of monopetalous dicotyledonous plants, consisting of plants usually herbaceous, sometimes shrubby, scattered over all parts of the globe, but most abundant in the form of species related to the common *Campanula*, or Bell-Flower, in the milder parts of Europe and Asia. The flowers are commonly blue, purple or white, occasionally rose-coloured, very rarely yellow. None of the species are poisonous, notwithstanding that the order is very closely allied to the dangerous *Lobeliaceæ*, which hardly differ except in having irregular flowers and syngenesious stamens.

CAMPBELL ARCHIBALD, eighth Earl of Argyll, was born in the year 1598. In 1628, when his father was abroad, having left the kingdom, he, who was then Lord Lorn, resigned into the king's hands his hereditary office of lord justiciar, or, as it came to be styled, justice-general of Scotland.

In April 1638, when the national covenant was sworn to by nearly the entire population of Scotland, Lord Lorn was called up with others to London to give advice to the king under the existing circumstances of the kingdom, and was the only one who spoke freely and honestly, and recommended the utter abolition of those innovations which his majesty had made in the constitution of the Scottish church. He returned to Scotland in May, and on his father's death, the same year, succeeded to all his honours and possessions. He attended the meeting of the general assembly at Glasgow that year, and openly joined the church against the court, and on the breaking out of hostilities he armed his vassals in support of the cause.

When the king came to Scotland in 1641, with a view to a settlement of the kingdom, Argyll was created a marquis, by the title of Marquis of Argyll. In the disturbance and civil war which soon afterwards followed, Argyll took, as before, an active part. In July 1646, when the king had surrendered himself to the Scottish army, Argyll went to Newcastle to pay his respects to him, and was afterwards employed in the conference with the parliament of England on the articles presented by the Estates to the king. He took also a leading part in the installation of Charles II., on whose head he placed the crown at Scone on January 1, 1651. He submitted, however, to the subsequent usurpation of Cromwell, and under Richard sat in parliament for the county of Aberdeen. For these compliances he was at the Restoration indicted for high treason, and, being convicted, he was beheaded on May 27, 1661.

CAMPBELL, JOHN, second Duke of Argyll, succeeded his father in 1703, and was thereupon sworn of the king's privy council, appointed captain of the Scots Horse Guards, and, though scarce twenty-five years old, raised to the seat occupied by his father as an extraordinary lord of session. For his services in furthering the union of Scotland with England, he was in 1705 created an English peer, by the titles of Baron Chatham and Earl of Greenwich. His grace after this served four campaigns under the Duke of Marlborough in Flanders, where he rose to the rank of lieutenant-general, and honourably distinguished himself in the battles of Ramilies, Oudenard, and Malplaquet, and at the sieges of Ostend, Meenen, Lisle, Ghent, and Tournay. On the change of ministry in 1710, he joined the court, and was appointed generalissimo in Spain; and on the same occasion his brother, the Earl of Islay, was made lord justice-general of Scotland for life. On his grace's return from the continent, he changed his political party again, and was in consequence deprived of his government offices. When the Hanover family attained the throne, he was appointed commander-in-chief of all the king's forces in Scotland, and in repressing the rebellion of 1715 behaved with great energy and decision. On the 13th April, 1719, he was advanced to the dignity of Duke of Greenwich. After several changes in the political world, he retired from public life, and died on September 3, 1743, when, leaving no male issue, his English titles of Duke and Earl of Greenwich and Baron Chatham became extinct.

CAMPBELL, JOHN, was born at Edinburgh, March 8, 1708. At the age of five years he left Scotland. He was placed in an attorney's office in London, but relinquished the law for the literary career. Before his thirtieth year he published (in 1736) 'The Military History of Prince Eugene and the Duke of Marlborough.' In 1739 he published the 'Travels and Adventures of Edward Brown, Esq.,' 8vo.; in the same year 'Memoirs of the Bashaw Duke de Ripperda,' 8vo.; in 1741 a 'Concise History of Spanish America,' 8vo.; in 1742 'A Letter on the Discovery, Importance, and Utility of the Thurlow State Papers;' and from 1742 to 1744 the 'Lives of the English Admirals and other eminent British Seamen.' In 1744 he also published in 2 vols. folio a collection of 'Voyages and Travels' on an improved plan. In 1745, in conjunction with Dr. Kippis, he commenced his labours in the 'Biographia Britannica.' In 1750 he published a work 'On the Present State of Europe,' which met with great success. A more important work was published in 1774, in 2 vols. 4to., entitled 'A Political Survey of Britain, being a series of Reflections on the Situation, Lands, Inhabitants, Revenues, Colonies, and Commerce of this Island.' In 1754 the degree of LL.D. was conferred upon him by the Glasgow University. Dr. Campbell died Dec. 28, 1775.

CAMPBELL, GEORGE, was born at Aberdeen in 1709. He relinquished the law for the purpose of studying divinity. In 1759, after having fulfilled pastoral duties since 1741, he was appointed Principal of Marischal College, Aberdeen. In 1763 he published his 'Dissertation on Miracles.' The degree of D.D. was soon afterwards conferred upon him by King's College, Aberdeen. In 1771 Dr. Campbell was appointed Professor of Divinity. In 1776 he published the 'Philosophy of Rhetoric.' His last work was a 'Translation of the Gospels, with Preliminary Dissertations and Notes,' in 2 vols. 4to. He died in 1796.

CAMPBELL, REV. JOHN, was born at Edinburgh in 1766, and apprenticed to a goldsmith and jeweller in his native city. About 1789 he began to dedicate himself to the Christian ministry.

He subsequently visited London, to take charge of twenty-four young natives of Africa, who were brought from Sierra Leone to be instructed in Christianity. He was subsequently requested to occupy the pulpit of a dissenting chapel at Kingsland, near London. He was ordained in 1804, and retained his pastoral charge until his death, April 4, 1840. Campbell took an active part in the formation of the British and Foreign Bible Society and several other important religious associations; and in 1812 he undertook a journey to the stations of the London Missionary Society in South Africa, from which he returned in 1814, and published an account of his journey in 1815. In 1818 he revisited Africa, on the same errand. The journal of this second visit, from which Campbell returned in 1821, appeared in 1822. He was the founder and for eighteen years the editor of the 'Youth's Magazine,' a useful religious periodical. In 1823 he established the 'Teacher's Offering.' Among his other works for the young were an abridgment of his 'Travels in South Africa,' 'Walks of Usefulness,' 'Words Displayed,' and 'African Light thrown on a Selection of Scripture Texts.'

CAMPBELL, THOMAS, was born July 27, 1777, at Glasgow, where his father had spent his life as a merchant. Thomas was the youngest of a family of ten sons and daughters. At the university of his native city, where he was educated, he appears to have distinguished himself rather by his occasional exercises than by his general industry and proficiency. He had left the university some years, and had been for a short space resident in Edinburgh, when he published there, in April 1799, his 'Pleasures of Hope,' which brought him at once into great reputation. It is said that the profits he derived from the sale of the 'Pleasures of Hope' enabled Campbell to visit the continent, which he did in the latter part of the year 1800. A seventh edition of his 'Pleasures of Hope' appeared in 1802, 'with Other Poems,' among which were his noble verses on the battle of Hohenlinden, his spirited and stirring song, 'Ye Mariners of England,' written at Hamburg on the prospect of war with Denmark, his 'Exile of Erin,' also written there, and his 'Lochiel's Warning,' which had been written at Edinburgh since his return. After being nearly two years in Edinburgh, he came to London in 1803, in which year he married. Among the works which he produced in the course of the next five or six years was a compilation entitled 'Annals of Great Britain, from the Accession of George III. to the Peace of Amiens,' 3 vols. 8vo., Edinburgh. In 1806 he received from the Fox ministry a pension of 200*l.* a year, which he enjoyed as long as he lived.

With the exception of a few occasional short pieces, he published no more poetry till his 'Gertrude of Wyoming' appeared in 1809, accompanied in the first edition by 'Lord Ullin's Daughter' and his 'Battle of the Baltic;' and in a subsequent edition by his tale of 'O'Connor's Child.' In 1818 he made a second visit to Germany, and the following year after his return appeared his 'Specimens of the British Poets,' 7 vols. 8vo. The year after its publication the author delivered a course of lectures on English Poetry at the Surrey Institution. In 1820 Campbell also undertook the editorship of the New Monthly Magazine, which he retained till 1830. In 1824 he published his 'Theodric, a Domestic Tale.' In 1827 he was elected Rector of the University of Glasgow, and he was re-elected to the office in the two following years. In 1832 he paid a visit to Algiers, an account of which he published in the Metropolitan Magazine in a series of papers, afterwards collected and reprinted under the title of 'Letters from the South,' 2 vols. 8vo. The other publications of his last years were a 'Life of Mrs. Siddons,' 'Life of Petrarch,' 'Life and Times of Frederick the Great' (of this he professed to be only the editor), and the 'Pilgrim of Glencoe,' a poem, 8vo., 1842. In the summer of 1843 he retired to Boulogne, and he died there June 15, 1844. His body was brought over to England, and interred on the 3rd of July in Westminster Abbey, near the centre of Poets' Corner.

(*Gentleman's Magazine* for August 1844.)

CAMPBELTOWN. [ARGYLESHIRE.]

CAMPEACHY. [YUCATAN.]

CAMPER, PETER, was born at Leyden, May 11, 1722. His father, Florent Camper, was a clergyman, who numbered among his friends Boerhaave, Gravesande, Musschenbroeck, and Moor; and it was in the society of these celebrated men that Camper spent much of his youth, and imbibed that love of science and the fine arts for which he was afterwards distinguished. On entering the university of Leyden he devoted himself with unwearied assiduity to the study of medicine, under Gaubius, Van Rooyen, the elder Albinus, and Trioen. Under these masters he soon rose to distinction; and he took his degree of doctor in philosophy and medicine in 1746. In 1748 he visited London, where he associated with Mead, Pringle, and Pitcairn, and where his taste for natural history was awakened by the cabinets of Sir Hans Sloane and Collinson, and the collections of Hill and Catesby. He spent nearly 12 months in England. On his return he successively occupied the chairs of philosophy, anatomy, surgery, and medicine in the universities of Franeker, Amsterdam, and Groningen. He obtained prizes from the academies of Dijon, Lyon, Toulouse, and Haarlem. He was a member of the academies of Berlin and Petersburg, and of the Royal Societies of London and of Göttingen, and a foreign associate of the Academy of Sciences at Paris. He was also a member of the state-council of the United Provinces, and a deputy in the assembly of the States of the Province of Friesland. He died of a violent pleurisy on the 7th of April, 1789, in the 67th year of his age, leaving behind him the well-earned reputation, not only of a distinguished anatomist and philosopher, but of an honest man. His works, or rather detached essays, are exceedingly numerous.

CAMPHOR is the stearopten (or one of the principles arising from the separation of the volatile oil of two trees) — the one, *Cinnamomum camphora*, a native of Japan, China, and Cochin China; the other, *Dipterocarpus camphora*, a native of Borneo and Sumatra. From these it is

procured by different processes. It exists in every part—root, stem, branches, and leaves—of the Cinnamomum camphora, which is chopped into pieces sufficiently small to be thrown into iron vessels: these vessels are afterwards covered with earthern hoods, in which are placed rice-straw and rushes, heat being subsequently gradually applied. The camphor is volatalised, and afterwards condenses on the straws, rushes, &c. This, after being purified from the intermixture of straws, is found in commerce under the name of crude camphor.

From the Dipterocarpus camphora it is not procured by distillation, but exists in a solid form in the stem of the tree. In that part of the stem which should be occupied by the pith it is found along with camphor-oil, and on the trunk being split open the camphor is found in the centre, in pieces about a foot long, which is much prized and used in the East, but is not sent to Europe.

Camphor is an organic substance of a peculiar kind, representing the volatile oils in a solid state. It differs from them however, not only in being solid at the ordinary temperature of the air, but in not being converted by the oxygen of the air into a resin. It is so volatile, that on exposure to the air it is entirely volatalised, and leaves no residuum. It is insoluble in water, but is easily dissolved in spirit, is inflammable, and has an aromatic smell and taste.

Camphor acts upon the animal frame, both in the state of vapour and in the solid state, as a powerful stimulant, and is employed in low fevers as a remedy; also in cramps, epilepsy, and some other nervous diseases. The use of camphor as a preventive of infection in cases of fever is hurtful, and tends rather to favour the morbific action which it is intended to prevent.

CAMPHOR-OIL, a substance obtained, in Borneo and Sumatra, from the *Dipterocarpus camphora*. It is supposed to be camphor in an imperfect state of formation.

CAMPHORIC ACID. This acid, obtained from camphor, is sometimes in small scales, and at others in needle-formed crystals. It is colourless; its taste is at first weak, but is afterwards acid, and finally bitter. At usual temperatures it is inodorous; but, when gently heated, it exhales a smell of camphor, which eventually becomes penetrating and acrid. At about 100° Fahrenheit it vaporises, and at 145° it fuses into a colourless fluid, which crystallises on cooling. It is more soluble in alcohol than in water. It consists of oxygen 5, hydrogen 15, carbon 10.

Camphoric acid unites with salifiable bases to form salts called *camphorates*, of whose properties or uses very little is known.

CAMPI, the name of a family of painters of Cremona. The eldest and master of the others was Giulio Campi; the others were Antonio, Vincenzio, and Bernardino. The first three were the sons of Galeazzo Campi, who died in 1536; the last apparently their cousin.

Giulio Campi was born about 1500, and died in 1572. He was the scholar of Giulio Romano at Mantua. In many instances he has combined the vigour of design of Giulio Romano with the colour of Titian, but his works are in various styles.

Bernardino Campi was born in 1522, and died about 1590. Though instructed by Giulio, he adopted a different style from his cousin, and is generally allowed to have surpassed him. He was also an excellent portrait-painter. Some of the greatest works in Cremona and Mantua were painted by Bernardino Campi; his masterpieces are the frescoes of the cupola and other works in San Sigismondo at Cremona.

(Laist, *Notizie Istoriche de' Pittori, &c., Cremonesi;* Lanzi, *Storia Pittorica*, &c.)

CAMPO BASSO. [SANNIO.]

CAMPO FORMIO. [UDINE.]

CAMPOMA'NES, COUNT PEDRO RODRIGUEZ, a distinguished Spanish civilian and statesman of the 18th century. In 1765 he was appointed fiscal advocate to the royal council of Castile, and was afterwards minister of state. He laboured zealously to rouse the industry of Spain from its state of torpor, and wrote several good works on the education of the people, and especially of the artisans. Under the ministry of Florida Blanca, Campomanes was removed from the council, and lived afterwards in retirement until his death, which took place towards the beginning of the present century. He was director of the Spanish Academy of History, one of the few useful learned institutions of Spain, and was also a member of the Academy of Belles Lettres of Paris, and of the Philosophical Society of Philadelphia. His principal works are: 'Antiguidad Maritima de la Republica de Cartago,' with a translation of the 'Periplus of Hanno,' illustrated by copious notes, 4to., Madrid, 1756. 'Discurso sobre el Fomento de la Industria Popular,' 8vo., Madrid, 1774. 'Discurso sobre la Educacion Popular de los Artesanos, y su Fomento,' 8vo., Madrid, 1775. As a continuation of the same subject, Campomanes wrote, 'Apendice á la Educacion Popular,' 4 vols. 8vo., Madrid 1776—7.

CAMPONTIA, a genus of marine Annelides, separated by Dr. Johnston, and described by him in the 3rd vol. of the 'Zoological Journal,' p. 325. In the 8th vol. of the 'Magazine of Natural History,' p. 179, where a figure and enlarged description of the animal are given, Dr. Johnston says: 'When I first described this animal, its close resemblance to some caterpillars was particularly mentioned, but the suspicion of its being actually a larva did not occur to me; for I believed it to be an established fact among entomologists that no insect passed its preparatory stages in sea-water. I have been informed however that Mr. Macleay—and no higher authority can be given—has proved that the worm in question is the larva probably of some dipterous fly; and, if this question is correct (which its anatomy strongly confirms), then it will follow that at least one larva naturally lives and undergoes its changes in the sea; a conclusion which I think is one of some importance, and at variance with our present notions. Our *Camponția cruciformis* may be found at all seasons, at the roots of sea-weed and corallines, in pools left by the recess of the tide. The very specimens before me were procured by myself, a few days ago, in parts to which no fresh water could have access, and which are covered to the depth of

several feet every tide, for they are near low-water mark.'

CA'MPSIA (Lepeletier and Serville), a genus of coleopterous insects, of the section *Heteromera*, sub-section *Stenelytra* (Latreille), and family *Helopidæ*. Generic characters:—Head broad; antennæ with the five terminal joints slightly serrated; body elongate.

CAMPTO'CERUS (Dejean), a genus of wood-feeding coleopterous insects (section *Xylophagi*, Latreille). Technical characters:—Antennæ not inserted close to the eyes, geniculated in the males, and furnished externally with long hairs. [XYLOPHAGI.]

CAMPTODO'NTUS (Dejean), a genus of coleopterous insects, of the family *Scaritidæ*, closely allied to *Oxyotomus;* from which genus, however, the present is distinguished by the species having the labial palpi shorter than the external maxillary: antennæ with the basal joint scarcely longer than the two following joints taken together. [SCARITIDÆ.]

CAMPUS MARTIUS, the name of a district outside the walls of ancient Rome, between the Quirinal and Pincian Mounts and the Tiber. It is chiefly level ground, and little higher than the river. After the expulsion of Tarquinius Superbus it was consecrated to Mars, and became a suburban place of resort for the citizens, for whose diversion gardens, shady walks, a race-course, a naumachia, theatres, &c., were successively constructed. The election of the consuls and other magistrates was held in the Campus Martius in the time of Cicero, and much of the canvassing took place there. Under Aurelian the walls of the city were extended, and the Campus Martius was inclosed within them. It was included in the region called Circus Flaminius. The name of Campo Marzo is now applied to one of the 14 Rioni or districts of modern Rome, which forms the northern part of the old Campus Martius between the Pincian Mount and the Tiber, and includes the fine entrance into the city by the Porta del Popolo, and that part of the Corso nearest to it, the Piazza di Spagna, where most foreigners reside, the Villa Medici, and the new gardens on the Pincian Mount, the port or quay of Ripetta, the palace Borghese, and the amphitheatre of Corea, which is used for bull-fights and fire-works, and which is built on the ruins of the mausoleum of Augustus. This district is the most bustling and lively, and one of the healthiest in Rome.

The name of Campo Marzo is also retained to denote a place in another district of the town, near Piazza Navona, where the palace Braschi and Pasquin's bust are, and which formed part of the ancient Campus Martius.

CAMPYLOMY'ZA (Wiedeman), a genus of dipterous insects, of the family *Tipulidæ*. The species of this genus are all extremely minute, and found on the leaves of trees. *C. bicolor* is less than one-twelfth of an inch in length, of a blackish colour, with the edges of the abdominal segments pale; legs pale yellow. This species, and three or four others, inhabit this country.

CA'MPYLUS (Fischer), a genus of coleopterous insects of the family *Elateridæ*. About six or seven species have been discovered, but one only, *C. dispar*, is known to inhabit England; it is found on the leaves of trees, nettles, and other plants, and is nearly half an inch in length.

CAMWOOD, a red wood, the colouring matter of which is similar to that of Nicaragua or peach-wood. It is used in dyeing, and also in cabinet work. It is brought chiefly from Sierra Leone.

CANAAN. [PALESTINE.]

CANADA, divided into Lower Canada and Upper Canada, is the most important British settlement on the continent of America. The country north of the St. Lawrence, watered by streams which fall into that river, is considered to belong to Canada, the remaining portion of Canada being south of the St. Lawrence. The extreme points in four directions are, south, Point Pelée, 42° N. lat.; north, near Lake Maniconagan, 53° N. lat.; east, Cape Gaspé, 64° E. long.; west, Goose Lake, 90° W. long. On the north and west, Canada is bounded by the Hudson's Bay territories; eastward by the ocean; and southward by the United States. For many years the last-named boundary was matter of dispute, but is now definitely settled. The boundary commences at the St. Lawrence in 45° N. lat., extends due east to the River Connecticut, and then follows an irregular line to the confines of New Brunswick. Towards the west the Great Lakes separate Canada from the United States. The average breadth of Canada from S. to N. is about 300 miles, and the length from Lake Superior to the Island of Anticosti about 1000. [BRITISH AMERICA.]

Physical Geography.—Nearly the whole of Canada is situated within the basin of the river St. Lawrence. This basin is calculated to contain 537,000 square miles; of which about 149,000 square miles are covered with water, not including in the calculation the smaller lakes, and taking into the account only the five larger and the St. Lawrence, with its wide æstuary.

Lake Superior covers	43,000 sq. m.
Lake Huron	16,500
Lake Michigan	13,500
Lake Erie	10,900
Lake Ontario	12,600
River St. Lawrence, and æstuary	52,500
	149,000

There remain 386,000 square miles, of which about 270,000 belong to Canada, and 98,000 to the United States.

Lake Superior, the true source of the St. Lawrence, is the greatest fresh-water lake on the globe, measuring on a curved line drawn through the centre more than 400 miles in length; its extreme breadth is 175 miles, and its circumference, following the sinuosities of the coast, about 1740 miles. Its surface, according to a rough calculation, is above 43,000 square miles. Its surface is 627 feet above the tide water in the Atlantic; but its greatest depth descends below it, being 792 feet. It receives the waters of many small rivers. It is studded with many islands, of which the largest

is Isle Royal, and its shores have many bays and inlets. The west end of the lake is connected by a cut or portage with the upper waters of the Mississippi; and the St. Mary conveys the waters of Lake Superior to Lake Huron. The country around Lake Superior is cold and dreary. There are numerous islands and a formidable rapid in the St. Mary's Channel.

Lake Huron is only second to Lake Superior in extent, its greatest length in a curved line between St. Mary's Strait and its outlet being above 240 miles; its circuit exceeds 1000 miles. The surface is 595 feet above high water in the Atlantic; and its greatest depth exceeds 450 feet. It is divided into two unequal portions by a series of islands called Manitoulin Islands, and by a peninsula called Cabot's Head. One of these islands is 72 miles in length. The smaller portion of the lake is named Georgian Bay. The larger portion is very deep; it has few islands; the shores are in many parts rugged; and it receives a few rivers. It communicates by the Strait of Machillimakinac with Lake Michigan, which is nearly 300 miles long, with an average width of 75 miles, and is very deep. Its form is elliptical and tolerably regular, and its shores are of moderate height.

The River St. Clair issues from the S. point of Lake Huron, and runs into a small lake called Lake St. Clair, which lake communicates with Lake Erie by the River Détroit. Lake Erie is 265 miles long, and 63½ broad at its centre; its circumference is computed at 658 miles; and its surface is 565 feet above the sea. Its greatest depth is about 100 feet, with a rocky bottom. The southern shores are low, and there are but few good harbours. Some small islands lie near the western end.

The waters of Lake Erie descend to Lake Ontario by the Niagara River, which is about 33 miles in length, and contains many small islands. About 20 miles from Lake Erie occur the Niagara Falls. Above the falls the banks of the river are very little elevated above the water's edge; but below the falls the current flows rapidly in a bed several hundred feet deep, and walled in on both sides by perpendicular rocks. The cataract consists of two falls, divided from one another by a small island called Goat Island. The fall on the American side is 162 feet high, and 375 yards wide. The fall on the Canadian side is 700 yards wide, and 149 feet high. The face of Goat Island measures 330 yards. The whole breadth of the river at this point is 1405 yards. Five miles lower down is a very strong eddy, called the Whirlpool; and five miles below it the river emerges from the rock-bound chasm, and flows in a deep and gentle current between banks of moderate elevation. At some very remote period, the falls were probably much farther to the north, between the villages of Queenstown and Lewistown, but the rocks have gradually given way to the continual friction of the rapid current, and receded to their present situation.

Lake Ontario extends nearly W. and E. in an elliptical shape, measuring in length 172 miles, and in circuit 467 miles; the depth varies from 8 to 100 fathoms. Its surface is 234 feet above the tide-water in the Atlantic. The shores are mostly low, and afford good harbours at York and Kingston. The Genessee, the Oswego, and a few other rivers, enter the lake on the United States side.

The St. Lawrence, here called the Cataraqui, expands into a noble stream below Lake Ontario. At one part it forms the Lake of the Thousand Islands, at another the Lake St. Francis, at a third the Lake St. Louis, and at a fourth the Lake St. Peter, all of which are expansions of the river, studded with islands. Impetuous rapids frequently interrupt the navigation of the river. At Montreal the Cataraqui changes its name to the St. Lawrence, and thence flows in a noble stream nearly 600 miles to the Atlantic. The expansion of the river towards its mouth is enormous. At Quebec the width is under a mile; at Saguenay, 18 miles; at Mont Pelée, 25 miles; at Seven Islands, 73 miles; and at Cape Rozière, 105 miles. The water is brackish nearly up to Quebec, and perfectly salt 75 miles lower down. At the mouth of the river is the island of Anticosti.

If we consider Lake Superior as the true source of the St. Lawrence, the length of the river, including a curved line drawn through the centre of Lake Superior, and extending to Cape Rozière at the mouth of the St. Lawrence, is 1859 miles.

The country northward of the St. Lawrence and the lakes may be divided, in respect to physical features, into three regions; of which the most western is very little known, the middle portion is nearly identical with Upper Canada, and the eastern with Lower Canada.

The western is separated from the middle portion by the range of La Cloche Mountains, which extends from the eastern end of Lake Huron towards the north. It is for the most part a table-land, containing numerous small lakes and rivers, a few swamps and forests, and a few fur-hunting establishments.

The middle portion extends from La Cloche Mountains to the River Ottawa. It consists of a table-land, two terraces, and an extensive plain. The table-land comprehends the northern half of this division, and has an average elevation of about 1300 feet above the level of the sea. There is a depression in the middle containing numerous lakes, which discharge their waters into the Ottawa and other rivers. Lake Nipissing, near the north-west boundary, is 50 miles in diameter. This table-land is well wooded, and is in the possession of native tribes. The Ottawa flows by way of Lake Temiscanning, Lake Allumettes, Lake des Chats, Lake Chaudière, and Lake Two Mountains, to the St. Lawrence, near Montreal. It incloses some large islands, and is interrupted by rapids. The whole river is about 450 miles long. The district between the table-land and Lake Ontario forms two terraces, which extend from east to west: they are separated by a range of hills. The northern terrace is the larger of the two, and is about 50 miles in width. It contains Lakes Simcoe, Balsam, Sturgeon, Pidgeon, Shemong, Shibanticon, Trout, Rice, and the Rivers Severn, Trent, and Trout. The soil of this terrace is fertile; but colonisation has not yet proceeded to any great extent. The smaller or

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southern terrace comes down to Lake Ontario; it is very fertile, and is more thickly inhabited than the northern. The extensive plain above alluded to, as forming part of middle or Upper Canada, comprises the irregular peninsula between Lakes Huron, Erie, and Ontario, the most southern part of Canada. The whole of this peninsula, containing about 20,000 square miles, is alluvial, fertile, and well wooded. On the banks of some of the rivers there are small prairies, or natural plains. The chief rivers of this plain are the Thames, the Ouse or Grand River, and the Welland or Chippeway! Colonisation in Upper Canada has been chiefly directed towards this peninsula.

The eastern portion extends from the Ottawa to the mouth of the St. Lawrence. It may be divided for description into two districts, situated east and west of Cape Torment. In the western district, the north bank of the St. Lawrence increases in height and boldness from the Ottawa to Cape Torment, 30 miles below Quebec. Where the banks are low, there is first a level plain, then a series of terraces, then a range of gently sloping hills, then a mountain range, and beyond this, to the north, a region which has been yet but little explored. Where the banks are high, as in the neighbourhood of Quebec, the country generally is hilly. The rivers which water this part of Canada are for the most part so interrupted by cataracts as to render navigation almost impracticable. The chief among them is the St. Maurice. The country N.E. of Cape Torment is very little known. The banks are high and rugged, and the interior somewhat wild and barren. Several rivers, among which are the Witshuan and the Assuapmonssoin, unite to form Lake St. John; two rivers, the Grande and Petite Décharge, carry off the waters of this lake, and afterwards unite to form the Saguenay, which thence runs about 100 miles to its junction with the St. Lawrence.

The above three portions of Canada are all northward of the St. Lawrence and the lakes; but a considerable part of Lower Canada is southward of the St. Lawrence. Mountain ranges divide this portion into three regions, of which one occupies the western extremity; another the southern margin of the St. Lawrence; and another the basin of the St. John. The western region is almost a level plain near the St. Lawrence; but farther north the country is more hilly. The whole is very fertile and thickly inhabited. Among the chief rivers of this region is the Chambly, which rises in Lake George, in the State of New York, flows through Lake Champlain, and empties itself into the St. Lawrence; the St. Francis, which rises in the lake of the same name, follows a rapid and turbulent course to the N.W., and flows into the St. Lawrence; and the Chaudière, which rises from Lake Megantic, and forms at one spot the magnificent Chaudière Falls, 132 feet in vertical height. The northern or St. Lawrence region rises gradually from the river to a distance of 15 to 20 miles, then forms a table-land, and then descends to the basin of the St. John. The region generally is hilly, and but little fitted for cultivation. The eastern portion of it is formed by the peninsula of Gaspé, between the Bay of Chaleurs and the mouth of the St. Lawrence; it is infertile and is thinly inhabited. The southern region, or basin of the St. John, is elevated and rugged. Along the frontier, between Canada and the United States, many of the hills are very lofty. All the rivers of this region flow into the St. John, and their valleys are for the most part fertile. The St. John, formed by three converging streams, follows a tortuous course, receiving the waters of the Allagath, the St. Francis, and the Madawaska, and empties itself into the Bay of Fundy. A portion of this river coincides with a portion of the boundary-line between the British territories and the United States.

Climate and Productions.—The more inhabited parts of Canada lie between 42° and 48° N. lat., but the climate resembles that of the north of Germany and the centre of Russia. The greatest part of the country is covered with snow from two to five months, and most of the rivers with ice for nearly the same time. The frost is sometimes so intense that the thermometer descends to 20° below zero of Fahrenheit. The heat in summer is very great; the thermometer rises every year to 100° and higher. The mean heat in July varies from 60° to 75°. The prevailing winds are from S.W., N.E., and N.W. Fogs are almost unknown. Thunder-storms are frequent, and often cause great damage. The aurora borealis is more frequently seen than in Europe, and has a much greater degree of brilliancy. On the great lakes of Upper Canada water-spouts are sometimes formed.

The grains cultivated in Canada are wheat, barley, rye, Indian corn, oats, and buck-wheat. Nearly all the vegetables grown in England can be raised. Fruits are abundant: the different kinds in different districts. Hemp, flax, and tobacco are cultivated in many districts. The extensive forests, which still cover by far the greatest part of the country, yield annually a great quantity of timber. Sugar is made from the maple-tree, and the spruce-fir is used for making spruce-beer.

The domestic animals are horses, cattle, sheep, and swine. The wild animals are deer, moose-deer, bears, wolves, wolverains, foxes, wild cats, beavers, otters, &c. Fish is abundant in the numerous lakes: cod is taken in great quantities in the Bay of Chaleurs, and on some of the neighbouring banks. The herring and salmon fisheries are also considerable. The humming-bird appears in Canada; and the rattle-snake is not uncommon.

Canada is not rich in minerals, yet iron is found in many places, and worked in a few. There are also lead, copper, coals, salt, and brimstone, and also some traces of silver ore.

Inhabitants.—The inhabitants consist of aborigines, and European settlers and their descendants. The aborigines are a very small part of the population; they belong to two nations, the Chippeways and Mohawks. The tribes of the Chippeways are dispersed over the countries bordering on Lakes Superior and Huron, and in Upper Canada. The most numerous of their tribes are the Algonquins, who inhabit the country be-

tween Lake Superior and the upper course of the Ottawa. The tribes of the Mohawks or Iroquois live in the countries along the St. Lawrence and between the Lakes Ontario, Erie, and Huron. A few of them have settled in villages, and embraced Christianity. The rest are hunters, without fixed abodes. Their number is rapidly decreasing, especially in the neighbourhood of the European settlements.

The Europeans are partly English or their descendants, and partly of French origin. The French are chiefly the descendants of Frenchmen settled in Canada before the year 1759, and still form the majority of the population in Lower Canada, especially to the south of the St. Lawrence, where they occupy some counties. On the north side of the river the number of English is probably equal, if not greater. Upper Canada is inhabited by the English, Scotch, and Irish, the number of French families being small, and almost entirely limited to the country along the Détroit River. The Canadians of French origin have preserved their native language, but they generally speak it incorrectly, and with some intermixture of English words. They are Roman Catholics, and distinguished from the English in usages and manners.

Upper Canada comprehends the countries W. of the Ottawa, with the exception of a small tract at the confluence of the Ottawa with the St. Lawrence, which belongs to Lower Canada. It is divided into 11 districts, which, beginning from the W., follow one another as follows:—Western, London, Ningara, Gore, Home, Newcastle, Midland, Johnstowne, Ottawa, Bathurst, and Eastern. These districts are divided into 27 counties. The chief towns are Gooderich, on the Huron Lake and the mouth of Maitland River; Sandwich and Amherstburg, on the River Détroit; London, on the Thames; Sherbrooke, at the mouth of the Ouse; Toronto or York, the capital of Upper Canada, and the seat of its governor and parliament [TORONTO]; Kingston, at the junction of the Cataraqui and the Rideau Canal, a thriving place, with a good harbour; Perth, on the Rideau Canal; and Bytown, at the junction of this canal with the Ottawa.

Lower Canada comprehends the country to the E. and N. of the Ottawa, and on both sides of the St. Lawrence River. It is divided into four districts, Montreal, Three Rivers, Quebec, and Gaspé, which contain 40 counties. Its two chief towns are MONTREAL and QUEBEC. The others, such as Three Rivers, Sorel, &c., are small.

History and Government.—Canada was first discovered by John and Sebastian Cabot, in 1497. In 1525 it was visited by Verazani, a Florentine, who took possession of the country for the King of France. In 1535 Jacques Cartier, bearing a commission from the French king, explored the River St. Lawrence, which he so called from his having first entered it on St. Lawrence's Day; but it was not until 1608 that the first permanent settlement was formed by the French under Champlain, on the spot now occupied by the city of Quebec. Quebec surrendered to the English under Kirk in 1629, but was immediately restored to France, peace having been established with that country in April of that year. In 1663 the colony was constituted a royal government, and the governors were thenceforth appointed by the king. Canada continued a possession of France until 1759, in which year Quebec was taken by General Wolfe, and the province was ceded in full sovereignty to Great Britain by the treaty of Paris, in 1763. From that time until 1774 the affairs of Canada were regulated by the ordinances of the governor alone; but in that year, under an act of parliament called the Quebec Act, a legislative council of 23 members was appointed by the king. In 1791 the form of government was again altered; the executive power was continued in the governor appointed by the crown, and two legislative chambers were formed; the members of the council or upper chamber were appointed by the king for life, and the lower chamber or assembly was composed of persons elected every four years by the proprietors of the soil. Besides these, an executive council was formed to act as the privy council of the governor.

During the last 30 years repeated efforts have been made to adapt the government of Canada more nearly to the wants and wishes of the colonists. The House of Assembly of Lower Canada claimed, from time to time, the right of appropriating to public purposes certain crown revenues within the province; it claimed the right to control the settlement of new districts; it objected to the mode in which the governor appointed certain members to the legislative body; it complained of the composition of the executive council, and of the subordination of that council to the colonial office in London; it objected to the assumption by the crown of certain territorial rights, which ought to have been left to the local legislature. Besides these sources of disagreement, the House of Assembly was mostly composed of French settlers, whereas the legislative council was mainly English; and the two bodies, actuated by hostile feelings, frequently negatived each other's decisions.

To enable the government to remedy these sources of discontent, two committees of the House of Commons sat in 1832 and 1834. Conciliatory measures were proposed; and a commission, consisting of the Earl of Gosford, Sir C. Grey, and Sir G. Gipps, was sent to Canada, to inquire into the alleged grievances. The control of the finances, the making of provisions for the judicial and civil functionaries, the settlement of uncleared lands, the control of the revenues derived from crown lands, the constitution of the legislative council—all were to be inquired into. When the House of Assembly learned the instructions which had been given to the commission, it thought those instructions involved in some points a breach of faith. Out of 88 members, 8 only supported the government in 1836; the supplies were refused, and great acerbity of feeling was exhibited. The failure of the commission in its office was reported to the home government, and in 1837 Lord John Russell brought certain resolutions before the House of Commons.

The above proceedings relate to Lower Canada. The disagreements in Upper Canada commenced in 1834. The House of Assembly elected in that year appointed a committee to inquire into certain grievances; a report was drawn up, adopted by the house, and transmitted to the home government. This report complained of the patronage of the crown in the colony; the state of the post regulations; the amount of salaries, fees, and pensions; the exclusive fostering of the established Church; the mode of settling new lands; the expense of colleges; the mismanagement of emigration; the bad auditing of public accounts; the withholding of those accounts from the House of Assembly; and the general opposition of the executive body to the wishes of the colonists. Sir Francis Head was appointed Lieutenant Governor in lieu of Sir John Colborne, and carried out with him instructions, mostly of a conciliatory nature, respecting all the points at issue; but the success of Sir Francis Head in Upper Canada was not more marked than that of the Earl of Gosford in Lower Canada, and the year 1837 found both provinces in a state of anarchy.

Lord John Russell's resolutions of 1837 were to a great extent unfavourable to the views of the colonists; they passed the British parliament, but excited a great ferment in Canada. The Houses of Assembly in the two provinces rejected all the proposals; tumults ensued, the military were called out, much blood was shed, and martial law was declared. The Earl of Gosford and Sir F. Head were recalled, and Sir J. Colborne and Sir G. Arthur were appointed in their places. The Earl of Durham was sent to Canada as governor and commissioner in 1838; but, on the refusal of the home government to sanction some of his proceedings, he threw up the office and returned to England, where he soon afterwards published a series of suggestions relating to the government of the two provinces. Shortly after this, other disturbances took place. At length, on the 23rd of July, 1840, the Act of the 3 & 4 Vict. c. 35, for the reunion of the provinces, was passed. It authorises the appointment of a legislative council by the crown of not fewer than twenty members, and enacts, that the two provinces shall return an equal number of representatives to the House of Assembly (at present 42 each); that the city of Toronto shall return two members, and the towns of Kingston, Brockville, Hamilton, Cornwall, Niagara, London, and Bytown, in North Canada, one each; that the cities of Quebec and Montreal shall return each two members, and the towns of Three Rivers and Sherbrook, one each; that the members of the House of Assembly shall be elected for four years; that all writs, proclamations, journals, &c. of the council and assembly shall be in the English language only; that the entire duties and revenues of the province shall form one consolidated fund, and the sum of 75,000*l.* is specifically appropriated for the civil government of the province.

Lord Sydenham (Mr. Poulett Thompson) was appointed governor of Canada, and brought this act into operation; he acted more in conformity with the wishes of the colonists than his predecessors, and brought public affairs into something like harmony. On the death of Lord Sydenham, in 1841, Sir C. Bagot was appointed to succeed him. This governor further succeeded in conciliating the good-will of the colonists, especially the French party. In 1843 Sir C. Bagot died, and was succeeded by Sir C. Metcalfe, who renewed a portion of the ill-will by insisting rather strongly on the royal prerogative in the appointment to offices. In 1845 the sympathy of the mother-country was drawn towards Quebec, on account of two disastrous fires in that city, by which 1632 and 1365 houses respectively were destroyed, and 20,000 persons were rendered homeless. In 1846 another fire in the same city led to the loss of fifty lives. In the same year, the Earl of Elgin was appointed governor of Canada, which office he still fills (Jan. 1848). The Canadian legislative has now perhaps more effective control over the affairs of the colony than at any former period.

Public Works, Trade and Commerce.—The chief public or engineering works in Canada relate to canals. On account of the interruption of the navigation between Lake Erie and Lake Ontario by the Falls of Niagara, the Welland Canal has been constructed from St. Catherine, on Lake Ontario, to Sherbrooke, on Lake Erie. Near St. Louis, in order to avoid a dangerous cataract, a small canal, called the Military Canal, has been constructed. A few short canals have been cut near the shores of the Ottawa, to avoid the rapids of that river. The Rideau Canal, 135 miles long, extends from Lake Ontario at Kingston, to the Ottawa at Chaudière: it is large enough to receive vessels of 120 tons' burden. The Welland Canal was greatly enlarged in 1845, and rendered capable of receiving vessels of heavy tonnage. The Cornwall Canal, 12 miles long, avoids some of the rapids of the St. Lawrence. The Beauharnois Canal, about the same length, unites the Lakes St. Francis and St. Louis. The Lachine Canal extends from Lake St. Louis to Montreal. The Chambly Canal unites the Lake Champlain with the Richelieu River. Accounts have just been received (Jan. 1848) that the works of a railway have been commenced, to run from Niagara to Detroit, nearly parallel with the northern shore of Lake Erie, and in connection with a suspension bridge over the Niagara near the Falls.

The traffic on the Welland and Lachine Canals in 1841 amounted to about 350,000 tons of goods, consisting of timber, agricultural produce, manufactures, salt, plaster, coals, bricks and stone. The tolls on these two canals in 1843 amounted to about 41,000*l.* The customs' duties in the year 1843-4 amounted to 241,572*l.* On the 31st Dec., 1846, there were registered, at the ports of the United Kingdom, 326 vessels which had been built in Canada, and of which the tonnage amounted to 154,930 tons. The ships which left the United Kingdom for Canada, and their tonnage, during 1844-5-6, were—

1844 .	1106 }	424,197 }	
1845 .	1371 } ships.	559,299 }	ton
1846 .	1420 }	564,373 }	

In 1846 there were 4 mail steam-packets on the

Canadian lakes: the *Experiment*, the *Minos*, the *Cherokee*, and the *Mohawk*.

The external trade of Lower Canada is carried on principally at the ports of Quebec, Montreal, St. John's, Coteau du Lac, and Stanstead. The imports from England are chiefly coals, metals, cordage, East India produce, and the various British manufactures; from the West Indies, sugar, coffee, molasses, rum, and hard woods; from the United States, beef, pork, biscuit, rice, and tobacco. The chief articles of export are pearl and pot ashes, wheat, flour, timber, beef, pork, and beer. At Montreal, 299 ships entered and left the port in 1843, and 406 in 1844; at Quebec there were 2634 in 1843, and 2647 in 1844. The imports to Canada, by sea, amounted in 1844 to 2,493,458*l*., besides imports by canal and lake navigation from the United States. The exports from Canada in 1844 amounted to 1,809,844*l*.

Population, Education, &c.—The population of Lower Canada, in 1825, was 423,630; in 1831 it was 511,917, of whom about 19-20ths were Roman Catholics. In 1843 the population amounted to 678,590. Of the 36 counties which formed Lower Canada in that year, the most populous were Montreal (43,773) and Quebec (36,173). The population of Upper Canada, in 1834, was 321,903. By the year 1841 it had risen to 455,301.

The emigration to Canada has been influenced by the tenure of land in that colony. In the seigneural districts of Lower Canada, a form of feudal tenure used to prevail. A grant of land was made by the French king to a seigneur, or lord of a manor, which he was empowered to lease off under certain provisos. When Canada passed into English hands this tenure fell into much confusion. An act was passed to regulate it in 1826; but a diversity of feeling on this subject afterwards tended to foment the outbreak of 1837. There are said to be 223 seignories in Lower Canada. In Upper Canada the land is held upon the tenure of free and common socage. The Canada Company, incorporated in 1826, purchased of the government 2,300,000 acres of crown lands and clergy reserve lands, in Upper Canada, with a view to resell or to lease the same to emigrants. The British American Land Company, established for a similar purpose, purchased from the government 1,000,000 acres in Lower Canada, which were to be resold or leased, and part of the proceeds applied to the construction of roads, bridges, canals, schoolhouses, and churches.

In the seven years from 1829 to 1835 inclusive, 211,150 emigrants arrived at Quebec; of whom some went to Upper Canada, some to the United States, and about 23,400 remained in Lower Canada. In 1834-5, the new settlers in Lower Canada amounted to 6387. The emigrants who landed at Quebec in the ten years, 1832-1841, amounted to 227,608, of whom far more proceeded to Upper Canada than remained in Lower Canada. The arrivals at the same port in 1842 amounted to 44,374; in 1843, to 21,727; in 1844, to 20,142.

The establishments for religion and education in Lower Canada, before the union of the two provinces, consisted mainly of 78 free schools, 2 grammar-schools at the two chief cities, 1062 preparatory schools, several Roman Catholic colleges, several private seminaries, a Protestant and a Roman Catholic Bishop of Quebec, an archdeaconry of Quebec, and ministries for all the different denominations. These establishments were maintained by funds derived from very various sources. In Upper Canada there were schools in each district supported by government grant, a chartered college for the higher branches of instruction at Toronto, archdeaconries at Toronto and Kingston, a Roman Catholic bishopric, and ministries for the different denominations in all the districts. After the union of the provinces, efforts were from time to time made to secure, for the purposes of education, funds arising from lands which had originally been destined to that purpose, but had been misapplied. The mother-country has afforded much assistance, within the last few years, towards the advancement of the religious and educational establishments of Canada. There are now three Protestant bishopries —Quebec, Montreal, and Toronto. In 1842, religious establishments received treasury grants to the amount of 6345*l*., and colonial grants to the amount of 12,184*l*. Educational establishments, in the same year, received treasury aid to the extent of 156*l*., and colonial grants to the extent of 63,104*l*. Religious and other private societies in England have since aided to increase the amount of funds available for these purposes.

CANADA GOOSE. [Goose.]

CANAL, from the Latin *canalis*, a tube or pipe, is a name given to any artificial channel filled with water, whether for the purpose of drainage, irrigation, the supply of a town with water, or inland navigation.

Ancient Egypt was intersected with canals, which were used both for navigation and irrigation; and in China they have been in use from before the Christian æra. The first made in Europe appears to have been that cut by Xerxes across the low isthmus of Athos. [Athos.] The Romans made canals in Italy and in the Low Countries, about the outlets of the Rhine, and probably also in Britain. In modern Europe canal-making commenced in Lombardy between the 11th and 13th centuries, and in Holland, where they may be compared for number with the public roads of this country, in the 12th century.

The origin of canal navigation in this country dates from 1755, when an act of parliament was passed for constructing a canal about 11 miles long from the mouth of Sankey-Brook, on the Mersey, to Gerrard's Bridge and St. Helens. Before this was completed, the Duke of Bridgewater [Bridgewater, Duke of] commenced his canal between Worsley and Manchester, in the construction of which Brindley [Brindley] exhibited that engineering skill which led to his subsequent employment in making several of the canals which yet remain as the principal arteries of inland navigation in this country. During the remainder of the 18th and the earlier years of the 19th centuries, the construction of navigable canals was carried on with vigour, until they were

made in England alone to an aggregate length of more than 2200 miles. In conjunction with new canals, many rivers have been artificially rendered navigable, so that it has been asserted that no spot in England, south of Durham is more than 15 miles distant from water-communication. The introduction and rapid extension of railways has almost entirely put a stop to the construction of canals, and in several instances canals either have been, or are about to be, drained and converted into railways; but it is by no means indisputably proved that the newer and more rapid mode of transit can compete with canals in the transit of heavy goods, especially as competition has led to a very great reduction in canal charges, and to improved modes of conducting the carrying trade.

In a level country the cutting of a canal is comparatively easy, though even in such a country difficulties may arise from the nature of the soil, or from an insufficient supply of water. Where the soil consists of sand, gravel, loose rock, or other matter through which the water will percolate, the floor and sides of the canal must be covered with an impervious lining, called *puddling*, which generally consists of light loam and coarse sand or fine gravel, well mixed with water, and applied, in a semi-fluid state, in three or more successive strata, each carefully worked into the preceding, to the thickness of about three feet. The puddling is then covered with common soil to the depth of eighteen or twenty-four inches. Strong clay is not suitable for puddling, on account of its tendency to shrink and crack, nor is any soil containing roots or other organic matter which would decay and leave cavities. As a further security against the escape of water, *mud* or *puddle-ditches* or *gutters* are sometimes formed along the sides of the canal. They are ditches about three feet wide, dug perpendicularly to a depth below the bottom of the canal, and gradually filled with puddling stuff to a few inches above the top water-line. When the banks are raised above the natural level, if the soil be of a porous nature, their stability will be aided by covering them with turf.

In securing an efficient supply of water, especially to the higher parts of a canal, advantage must be taken of springs and rivulets, and reservoirs will occasionally be necessary. Steam-engines may in some cases be indispensable for raising water to supply these reservoirs; and many arrangements are necessary with the owners of mills and others affected by any interference with the waters from which a supply may be taken. Puddling, embanking, and other engineering operations may be needed in improving the streams adopted as feeders; and in some cases brick culverts or iron pipes may have to be used to conduct the supply. Where the feeders have to be conveyed across a valley or another stream, cast-iron pipes may be found very advantageous.

When the canal passes through an uneven country it must frequently be conducted in a very tortuous course to maintain the level; and deep cuttings, tunnels, embankments, and arched or iron aqueducts must be introduced where the level of the canal is unavoidably much below or above the natural surface. Canal tunnels are usually

of smaller transverse dimensions than those found on railways, though this is not invariably the case; but many are of great length. That at Blisworth, on the Grand Junction Canal, is 3080 yards, or a mile and three quarters long; that on the Thames and Medway Canal, which has been recently converted into a railway tunnel, is about two miles and one-eighth; one on the Leominster Canal at Pensax is 3850 yards, or nearly two miles and a quarter; and the Marsden tunnel, on the Huddersfield Canal, is 5451 yards, or upwards of three miles long. The tunnels or excavations on the Duke of Bridgewater's Canal, which is conducted by several channels into the heart of a coal mine, are said to be altogether eighteen miles long. Telford introduced, for situations where a canal is greatly elevated above the surface, aqueducts formed of cast-iron plates screwed together by means of flanches, and supported upon piers or pillars of masonry. The first aqueduct of this kind was that for carrying the Shrewsbury Canal across the Fern valley at Long Mill; but the most extensive and remarkable is the Pont-y-Cysylte, which carries the Ellesmere and Chester Canal over the Dee at an elevation of 125 feet above the bed of the river. The trough or aqueduct is 988 feet long, twenty feet wide, and six feet deep; and it is supported by nineteen pairs of stone pillars, fifty-two feet apart.

Unavoidable changes of level are usually overcome by *locks*, the invention of which has been disputed by the Dutch and the Venetians. Leonardo da Vinci is said to have applied them in 1497 to the Milanese canals.

A lock is a chamber of masonry occupying or constituting the bed of the canal between the upper and lower levels, at the point where it is desired to transfer boats from one to the other, and furnished with gates at each end, and with sluices communicating with both the levels. When a boat is to be passed from the lower to the upper level, the water is suffered to escape from the lock until its surface coincides with the lower level. The gates at the lower end are then opened, and the boat is floated into the lock. The sluices which communicate with the upper level being then opened, the level of the water in the lock is raised until it coincides with the upper level of the canal. The upper gates are then opened, and the boat is floated out of the lock. The operation of lowering a boat is precisely the reverse. Every time the operation is performed, a quantity of water, equal to the contents of the lock, is lost from the upper level. To make this loss as small as possible, locks are made only just wide enough to admit the widest boats used on the canal; and in some cases two are formed side by side, with a communication between them, so that, whenever one has to be emptied, one-half of its contents may be transferred to the adjoining one, and saved for a future occasion. This arrangement also saves time. Inclined planes, up and down which the boats may be conveyed on trucks or sledges, have, in a few cases been used as substitutes for locks.

The usual mode of moving boats upon a canal is to *tow* or draw them by means of a long rope, by horses driven along a raised *towing-path* formed

along one bank of the canal. To save expense, the older canal bridges were made so small that it was necessary to detach the horses on coming to them, and to get the boats through by manual labour, or by mere impetus; but on the best modern canals the arches are made large enough to include a towing-path as well as a water-way. The same remark applies to tunnels. In several of the older tunnels the boats were forced through by the laborious and dangerous process of *legging*, which was performed by men lying upon their backs on the boat, and thrusting their feet against the sides or roof of the tunnel. In some cases ropes or chains worked by steam-engines have been used for hauling boats through. The attempts made to propel canal-boats by steam-power have been of questionable success. Paddle-wheels of every kind disturb the water so much as to injure the banks; and, supposing that it be found practicable to apply the screw-propeller so as to avoid this difficulty, similar injury is to be apprehended from the mere increase of speed. On the Glasgow, Paisley, and Androssan Canal fly-boats for passengers, drawn by horses at a considerable speed, have been run successfully; but, amidst conflicting statements, it is difficult to decide whether in any case the ordinary walking pace of a horse can be exceeded on a canal without a greater loss of power than would attend the like increase of speed upon a railway or perfect road. From experiments made while railways were yet in their infancy, it would appear that, while at a very slow pace heavy goods may be conveyed much more economically on a canal than in any other way, the economy turns in favour of a railway where the velocity exceeds four miles per hour, while at high velocities the economy of the canal disappears even as compared with an ordinary road.

CANAL, ANTO'NIO, called CANALETTO, was the son of Bernardo Canal, who followed the profession of a scene-painter. Antonio was born at Venice, but the precise date of his birth appears to be unknown. At his death, in 1768, he was said to be aged 71. He originally followed his father's occupation. About the year 1719, disgusted with the petty annoyances of the theatre, he went to Rome, where he employed himself for a long time in studying from the ancient ruins. On his return home, he devoted himself to painting views in the city and original compositions. In the latter part of his life he visited London, where he was in great estimation.

His handling is light, bold, and firm; his colouring bright, true, and relishing; his figures well disposed.

CANARA, a province on the west coast of Hindustan, between 12° and 15° N. lat., and between 74° and 76° E. long. This province is bounded N. by Bejapore and the Portuguese territory, E. by Mysore and the Balaghaut Ceded Districts, S. by Malabar, and W. by the Indian Ocean. The length of the province along the coast from N. to S. is 180 miles, and its mean breadth is about 40 miles; the total area has been computed at 7380 square miles. The province is divided into two districts, North and South Canara; the line of division is about 13° 40′ N. lat. The surface of Canara is rocky and uneven. There are several mountain streams in the province, but no rivers of consequence. The entire population of Canara has been estimated at about 600,000. The inhabitants of the sea-coast are principally Mohammedans, and those of the interior Hindoos.

Almost the only production of the province is rice, for cultivating which the climate is peculiarly favourable, owing to the prevalence of rains. Cocoa-nuts, betel, and pepper are cultivated, but not extensively.

The chief towns are—in the north division, Batticollah; in the south division, Mangalore and Barcelore. Batticollah stands on the sea-coast, in 13° 55′ N. lat. and 74° 37′ E. long., on the north bank of the Scandaholay, a small stream which waters a beautiful valley surrounded by hills. Mangalore is built on the margin of a salt lake, which is separated from the sea by a sandy beach in 12° 53′ N. lat., and 74° 57′ E. long. Mangalore is a place of considerable trade. The exports consist principally of rice, betel-nut, pepper, sandal-wood, and turmeric, to Muscat, Goa, Bombay, and the coast of Malabar. The imports consist of raw sugar and silk from Bengal and China, and of oil and ghee from Surat. The Portuguese had a factory at Mangalore, which was destroyed in 1596 by the Arabs from Muscat. It was afterwards in the possession of the English, then of the rajas of Mysore, and ultimately of the English. The population has been estimated at 30,000.

The province of Canara was taken from the Hindoos by Hyder Ali, raja of Mysore, in 1763. On the death of his son Tippoo, in 1799, the whole province was placed under British authority, and is now included in the territories of the Bombay presidency.

(Buchanan's *Journey through Mysore, Canara, and Malabar;* Mill's *History of British India.*)

CANARIA. [CANARIES.]

CANARIES, a group of islands in the Atlantic, lying off the western coast of Africa, and extending between 27° 42′ and 29° 25′ N. lat., 13° 18′ and 18° 10′ W. long. Pliny ('Nat. Hist,' vi. 33) gives some account of them, which is taken from the work of Juba, the learned Mauritanian king. He calls the whole group the Fortunatæ Insulæ, or Happy Islands. The modern name of the group is derived from the name of Canaria, one of the islands, so called, according to Pliny, from the number of large dogs (*canis*, a dog) found there, two of which were brought to Juba. In modern times the first mention of them dates from about the year 1330, when a French ship was driven among them by stress of weather. Two expeditions, undertaken by the Spaniards in 1385 and 1393, with the object of taking possession of the islands, failed in consequence of the resistance of the natives. In the year 1400 John De Bethencourt, a Norman nobleman, sailed from Rochelle with a small force and landed at Lanzarote, the most eastward of the islands, on which he built a fort. On his return to Spain he obtained from Enrique III. of Castile and Leon a grant of

all the islands, with the title of king. In a second expedition in 1405 he made himself master of Lanzarote, Fuerteventura, Hierro, and Gomera; but his attempts on the other islands were foiled by the bravery of the natives. De Bethencourt died in 1408, and was succeeded by a nephew, who sold his title to the islands in 1418 to Enrique De Guzman. This nobleman exerted himself to complete the conquest of the islands, but without success. The Spaniards went through a form of taking possession of Gran-Canaria and Tenerife for the crown in 1461; but it was not till 1493 that these two islands and Palma were completely reduced, and since that time the Canaries have been always held by the Spaniards. The original inhabitants were called Guanches, of whom little is now known except their bravery and their custom of embalming the dead. Owing to intermarriage with their conquerors, the Guanches have ceased to exist as a separate people, and the population may now be considered entirely Spanish.

The group consists of seven islands: Hierro or Ferro, Palma, Gomera, Tenerife, Gran-Canaria, Fuerteventura, and Lanzarote; and of several small rocky islets, the largest of which are Graciosa and Alegranza. The whole group stands on a bank; but the depth of water between the islands is very great, and the passages are good. They are all of volcanic origin, and present a surface diversified by rocks, gorges, mountains, and valleys. The coasts are high and precipitous; there are no close harbours, the anchorage being generally open roadsteads. The mountains, which are barren, rocky, and peaked, rise to the greatest height about the centres of the islands, and some of them have their summits covered with snow during the winter. The valleys, wherever there is water or any humidity in the soil, are exceedingly fertile, producing grain, vegetables, and fruits, both tropical and European. The vine is extensively cultivated, and much wine is made. The sugar-cane grows, but its cultivation is neglected. All kinds of domestic cattle abound in some of the islands. Camels are reared and used as beasts of burden. Fowls, ducks, geese, pigeons, and turkeys are very numerous. The number of wild birds, both native and migratory, is also very great; among the former are wild pigeons, quails, larks, and canaries.

Each of the islands has its governor, and the whole group is under a Captain-General. The whole area of the islands is about 4110 square miles; and the population about 248,000. The entire annual produce is estimated as follows:—wheat, maize, barley, millet, and rye, 170,000 quarters; wine, 54,000 pipes; barilla, 300,000 quintals; and potatoes, 500,000 barrels. The chief foreign trade is with England, the United States, and Hamburg: there is also an active trade between the islands. The number of foreign vessels which visited the islands in 1842 was 111, with a tonnage of 14,103. The principal ports are Santa-Cruz and Orotava in Tenerife, and Palmas in Gran-Canaria. The exports consist of wine, fruits, corn, barilla, honey, orchilla, moss, fish, cochineal, raw silk, &c.; the imports are woollen and cotton cloths, linen, silks, colonial produce, brandy, paper, oil, glass, hardware, &c. There are important fisheries along the coast of Africa.

The temperature is very equable and the climate excellent. There are two seasons, the rainy and the dry. The dry season lasts from April to October; during its continuance the weather is constantly fine, and the north-east trade wind blows without intermission, being strongest from the middle of May to the middle of August. The mountains of the several islands, by obstructing the course of the north-east trade-wind, cause calms to prevail for several miles to leeward to the point where the divided currents again unite. These winds render communication between the islands tedious. A vessel can run from Tenerife to Hierro in a day; but the return voyage takes ten or twelve days, sometimes three or four weeks. From October to April the south-west winds prevail, attended with rain; and at times with thunder-storms. The genial nature of the climate is disagreeably affected, at the beginning and end of the rainy season, by the south-east wind called El Levante, which, blowing across the Sahara, is dry, hot, and sultry, and produces great thirst. It sometimes carries clouds of locusts, which commit great ravages on the corn-fields and plantations. The islands are ill supplied with spring-water. Rain-water is preserved in tanks.

Hierro, or *Ferro*, the most south-western of the Canaries, contains about 80 square miles, and has a population of 5090. The promontory on the west coast, now called Debesa, was formerly famous as the point through which the universal first meridian was drawn; it is 18° 10′ W. of Greenwich. The island suffers more than any of the others from droughts, and but for the frequent fogs vegetables could not live. Valverde, a small place on the north-eastern coast, is the chief place in the island.

Palma lies N. by E. of Hierro; it is about 30 miles long from N. to S., and its greatest breadth is about 20. The area is 510 sq. miles, and the population about 34,000. The mountain ridge runs from N. to S., and contains many extinct craters of great height. The central crater, called Caldera, is surrounded by many lofty peaks, of which the Pico-de-los-Muchachos and the Pico-de-la-Cruz, rise to the respective heights of 7631 and 7469 feet above the sea. The coasts and valleys are extremely fertile, producing much wine, fruits, and silk. There are forests in the island in which good timber is grown; the palm, sweet-bay, and myrtle abound; and in many places the *Euphorbia balsamifera* or *Canariensis* grows. Santa-Cruz-de-las-Palmas, the capital, is on the east coast: it and Tazacorte on the west coast are the chief ports. Some taffetas, stuffs, and ribands are the only manufactures of any importance.

Gomera, which lies S.E. of Palma, is nearly circular, and contains 164 square miles. The mountains consist of granite and micaceous slate. The valleys are well watered, but badly cultivated. Corn, wine, oil, cotton, fruits, moss, and honey, are produced. Cattle, sheep, mules, poultry, and game, are abundant. San-Sebastian is the chief town and port. The island has a population of about 12,000.

Tenerife is the largest and most important of the islands. It is about 60 miles long from N.E. to S.W.; its greatest breadth is 30 miles, but it grows gradually narrower towards the north-east, and at that extremity the breadth is not more than 6 miles. The area is about 1225 square miles, and the population 86,000. About one-seventh of the surface is fit for cultivation; the remainder is covered with lava and other volcanic matter, and a great part of it is entirely destitute of vegetation. The coasts present some remarkable promontories (*puntas*)—Del-Hidalgo on the N.W., Anagada on the N.E.; Rasca on the S., and Teno and Buenavista on the W. The highest point on the island is the Peak of Teyde, or Peak of Tenerife, a dormant volcano, rising to the height of 11,946 feet above the sea. The crater measures 300 feet by 200; it is surrounded by a circular wall 40 feet high, which from a distance has the appearance of a cylinder placed on a truncated cone. The Peak rises above the current of the trade-winds, and is always exposed to a violent continuous gale from the west. The view of this mountain from Orotava on the west coast is magnificent, from the contrast of the rich cultivated plain and the leafy forests with the barren, wild, and stern aspect of the Peak. Teyde is connected by a mountain ridge with another crater called Chahorra, which is 9888 feet high. Sulphureous vapours are constantly issuing from the crevices in these craters. To the west of Chahorra there are four volcanic cones, which were in a state of eruption in 1798. The Peak of Teyde is surrounded on the S. and E. by a continuous chain of mountains, inclosing a semi-circular plain of about 3 miles' radius, which is called Llanos de las Retamas, from a plant, *retama*, almost the only vegetable that grows on it. The whole plain is nearly covered with pumice stone. The country west and north of the Peak descends with rapid broken slopes towards the sea. The outer edge of the semi-circular mountains is surrounded by high table-lands, which, together with the region of the Peak cover nearly half the island, and contain some pine forests. Towards the north-east these table-lands, which have a very broken surface, extend for about 20 miles, and terminate in the plain of Laguna. This plain, which is nearly in the middle of the island, is of considerable extent; it is shut in by hills, and is nearly a dead level. After the rains it is partially covered with water, from which circumstance it takes its name. It produces abundance of grain, but no trees. The eastern part of the island consists of numerous fertile valleys separated by basaltic hills, the highest of which, the Bufadero, is 3069 feet above the sea. This part produces the finest fruits in the island. The valley of Taoro, in the northern part of the island, is of great extent and of extraordinary fertility.

In Tenerife all European domestic animals, and also white camels, are reared. Cattle are kept for slaughter and the plough; cows are never milked. Goats, sheep, asses, and mules, are numerous. The silkworm is extensively reared. Bees also are numerous, and a great deal of excellent honey is collected. Rabbits, wild fowl, turkeys, and all kinds of poultry, are very plentiful. The agricultural produce is similar to that of the other islands. The quantity of wine annually made amounts to 3,000,000 gallons; the best sort, called Vidonia, which resembles Madeira, is exported to England. Coffee has been cultivated with success; iron ore is found, and sulphur abounds on the Peak of Teyde. Linen and woollen stuffs are manufactured by each family generally for its own use. Some silk stuffs, earthenware, soap, vermicelli, leather, brandy, ropes from the agave, hats, baskets, and mats of palm leaves, are the other chief articles of manufacture. The imports consist of iron utensils, hardware, bar-iron, flax, glass, pottery, leather, candles, cotton goods, provisions, cod, &c.; the exports are wine, brandy, barilla, almonds, dried fruits, raw silk, and orchilla.

The island is divided into three districts—Laguna, Orotava, and Garachico. Santa-Cruz-de-Santiago, the chief town and port of the island, stands on the north-east coast. It has a small harbour, well sheltered except from the south-east winds. The town is the residence of the Captain-General of the Canaries, and has a population of 9000. San-Christoval, in the centre of the plain of Laguna, is a pleasant, well-built town with 10,000 inhabitants. Orotava, on the north-east coast, stands on the slope of a hill nearly 1200 feet above the sea; it is a well-built, thriving place, with 8000 inhabitants, who carry on a considerable commerce by means of a harbour, 2 miles distant, at Puerto-de-la-Orotava, a town of 4600 inhabitants. Guimar, S.W. of Santa-Cruz, stands in a fertile, well-watered valley, and has a population of 3500; near it are several mummy tombs of the Guanches. Taraconte and Icod-de-los-Vinos are on the north coast, and have each about 5000 inhabitants. Garachico is a port to the west of the Peak, on the low coast north of Buenavista.

Gran-Canaria, or *Canaria*, which gives name to the group, lies E. of Tenerife. It is nearly circular and about 75 miles round. The population is about 69,000. The highest point, El Cumbre or Pico-del-Pozo-de-las-Nieves, is 6648 feet above the sea. The mountain Sancillo, near the centre of the island, is 6070 feet high, and is surmounted with a large wooden cross. Port-la-Luz, which affords good anchorage, and is well sheltered from the north-east winds, is formed by Isleta, a rocky promontory joined to the island by a low isthmus. Las-Palmas, the capital of the island, is on a bay on the east coast; it is the largest and best built town in the Canaries; is the seat of a bishop and of the Audiencia Real, or supreme court of justice for all the islands. The city is well supplied with water by numerous fountains, and has 18,000 inhabitants. It contains a cathedral, hospital, college, several monasteries, and has a well-supplied market. The harbour is formed by a mole.

Fuerteventura, which is N.E. of Gran-Canaria, is about 60 miles long; its breadth is very irregular, varying from 20 miles to 5. The area is stated to be 980 square miles, and the population 18,000. It is less mountainous than the other islands.

Though generally barren it contains many spots of great fertility. The interior formation of the island is singular. A group of extinct volcanoes, 2160 feet high, branch off S. from Puerto-Cabras eastward and westward to within a short distance of the sea, follow the direction of the coast for about 30 miles, and then again unite, inclosing an extensive arid plain, on which several villages are built. From the southern junction of the mountains an isthmus, 5 miles long and 2½ wide, unites the mountainous peninsula of Jandia to the main part of the island. This mountain mass is about 28 miles long: it presents a precipitous face towards the north-west, rising directly to the height of 2820 feet above the sea, but sends out spurs in other directions, which inclose slopes of easy ascent. It is uninhabited, though it is said to contain some good springs. The pasturage on it is so fine, that the flocks and herds are driven here from other parts of the island to graze. Orchilla also is produced in large quantities in the peninsula. The capital of the island is Santa-Maria-de-Betancuria, also called La Villa. The only road in the island leads from La Villa to Cabras on the east coast, which is the chief port. The anchorage at Cabras is indifferent, and the landing-place a beach of shingles. Oliva, in the fertile valley of Oliva, in the north of the island, is the largest town in the island, and has only 2000 inhabitants.

Lanzarote, the most eastward of the Canaries, lies N.E. of Fuerteventura, from which it is separated by a strait called La Bocayna. The island is 31 miles long, and its breadth varies from 5 to 10 miles. The area is about 250 square miles, and the population is about 18,000. From the northern extremity of the island, precipitous cliffs 1500 feet high, run S.W. for 7 miles, and terminate in a sandy plain, where in 1825 an eruption took place, and two considerable hills were thrown up, which are still burning. Beyond this plain the shore is again precipitous as far as the promontory of Pechiguera, with the exception of the little bay of Janubio, in which there was formerly a harbour for small vessels. This harbour was converted into a salt lake by the eruption of 1765. The eastern shores are neither so steep nor so high, and there are many fertile tracts of ground. The highest land called Montaña Blanca is nearly in the centre of the island; it is 2000 feet high and cultivated to its summit. This island is subject to long droughts, and to gales of excessive violence. The wine and grapes are of superior quality. Teguise, a small place in the interior, is the chief town. Naos, on the eastern shore, has a small secure harbour, formed by rocky islets, and with two entrances, of which the northern one has a depth of 12 feet, the eastern of 17½ feet at low water, and 9 feet rise of tide. Arecife, situated S. of Naos, has 2500 inhabitants, most of whom are engaged in the fishery on the African coast.

The Little Canaries lie N. of Lanzarote, and are connected with it by a bank, on which there are 40 fathoms water. Graciosa is separated from Lanzarote by the Strait del Rio, which is about a mile wide, and is the safest and most commodious port for large ships in the Canaries. The great difficulty of communicating with Lanzarote, on account of the high precipitous coasts of that island, presents an insuperable obstacle to this strait being resorted to as a harbour for trade. Graciosa and Alegranza, a little further north, are both the product of extinct volcanoes; they contain craters, and are covered with naked basaltic rocks, lava streams, and other volcanic matter. They are inhabited by 40 or 50 persons each, who cultivate barilla in the bottom of the craters. Santa-Clara, Roquete, Lobos, and the others, are mere rocky islets and uninhabited.

(Glas, *History and Conquest of the Canary Islands*; Humboldt, *Voyage aux Régions Equinoxiales du Nouveau Continent*; Von Buch, *Physikalische Beschreibung der Canarischen Inseln*; *Journal of the Royal Geographical Society*.)

CANARY BIRD, or CANARY FINCH (*Fringilla canaria*, Linn.; *Le Serin de Canarie* of the French; *Canario* of the Italians).

The early history of this well-known songster, which breeds so readily in cages and aviaries, is somewhat obscure. It appears to have been imported originally from the Canary Islands, where it still exists in a wild state; some say in the 14th, some in the beginning of the 16th century. The latter opinion is advocated by Bechstein, who describes its introduction, in consequence of a shipwreck, into the district of Italy opposite Elba, where the birds being set at liberty would have increased, had they not been captured in such numbers that at last they were extirpated from their new abode.

According to Linnæus ('Syst. Nat.,' 12th ed.), an allied Finch, *Fringilla butyracea*, is a native of Madeira, and, as Gmelin says, of India and the Cape of Good Hope; while the *F. Canaria* occupies the Canary Islands and the adjacent parts of the continent of Africa. Dr. Heineken however ('Zool. Journal,' vol. v.) regards these two so-called species as identical, and their scientific appellations as mere synonyms. He gives an elaborate description of the bird as it appears in Madeira. As to its habits, Dr. Heineken says, that it builds in thick, bushy, high shrubs and trees, with roots, moss, feathers, hair, &c.; that it pairs in February, lays from four to six pale blue eggs, and hatches five times (not unfrequently six) in a season. He observes that it is very familiar, haunting and breeding in gardens about the city. 'It is a delightful songster,' says the Doctor, 'with, beyond doubt, much of the nightingale's and sky-lark's, but none of the wood-lark's song, although three or four sky-larks in confinement in Funchal are the only examples of any of these three birds in the island, and notwithstanding the general opinion that such notes are the result of education in the canary. It is in full song about nine months in the year. I have heard one sing on the wing, and passing from one tree to another at some distance, and am told that during the pairing season this is very common. Each flock has its own song, and, from individuals in the same garden differing considerably, I suspect that of each nest varies more or less. After the breeding season, they flock along with linnets, goldfinches, &c., and are then seldom seen in gardens.

The moult takes place in August and September. An old bird caught and put into a cage will sometimes sing almost immediately, but seldom lives longer than the second year in confinement. The young from the nest are difficult to rear, dying generally at the first moult. They cross readily with the domesticated variety, and the progeny are larger, stronger, better breeders, and, to my taste, better songsters also than the latter; but a pure wild song from an island canary, at liberty, in full throat, and in a part of the country so distant from the haunts of men that it is quite unsophisticated, is unequalled, in its kind, by any thing I have ever heard in the way of bird-music. The colour of the wild canary is gray or brownish gray, with a tinge of green; darker on the upper parts; and olive green on the chest. We have seen domestic canaries, closely resembling the wild stock, having the upper parts of a dusky green or linnet brown, and the under parts yellowish green. Such birds are stronger than the varieties more remote in colour from the original stock.

It is to the effects of food, domestication, and an unnatural state of existence, that the plumage of our caged canaries owes its many modifications. We have recently seen one purely white: but pale yellow, bright yellow, more or less tinged with orange; yellow mottled, or streaked with brown or black, are the most common. Many have the head crested. Varieties, according to the skill and design of the bird-fancier, are continually produced; and prizes are awarded by the bird-fanciers' societies to the competitors who can show birds nearest to the model published by them the season prior to that wherein the exhibition is to take place. Amateurs distinguish upwards of thirty varieties. Vast numbers of canaries are bred in Germany, and sent over to London and other parts of England for sale.

The canary, as is well known, not only breeds with its own species in captivity, but with other allied species; and these hybrids are more or less in esteem according to their beauty and song. The following mules or hybrids are the most usual:—1, hybrids between a hen canary and male goldfinch; these are often very beautiful: 2, mules between a hen canary and male siskin; these partake much of the characters of the siskin: 3, mules between a hen canary and greenbird, or citril finch: 4, mules between a hen canary and a linnet: 5, mules between a hen canary and bullfinch; these are extremely rare, but were obtained by Dr. Jassy of Frankfort.

The song, the habits, and manners, and the docility of the canary in captivity, are too well known to be described. It may be taught to whistle airs, as it often is in Germany, and even to repeat very short sentences, in a sort of half whistling voice. A bird thus instructed we had some years since an opportunity of seeing in London.

With respect to the best method for breeding canaries, for educating them in music, and for their general treatment, we must refer to Bechstein, and to Rennie's article in the last edition of Montagu's *Ornithology*.

CANARY SEED. [PHALARIS.]

CANCALE. [ILLE-ET-VILAINE.]

CANCELLIE'RI, FRANCESCO, born at Rome in 1751, after studying in the Roman college, became secretary to the senator Rezzonico, and afterwards librarian to the learned Cardinal Antonelli, Prefect of the Propaganda. In 1773 he edited a newly discovered fragment of the 91st book of Livy, with a preface. On the occasion of the new sacristy added by Pius VI. to the Basilica of the Vatican, Cancellieri undertook a work of historical and liturgical erudition on the ancient office of Secretary of that Basilica, 'De Secretariis Basilicæ Vaticanæ.' This work was received with great applause by the learned. He afterwards published a 'Descrizione del Carcere Tulliano,' a notice on the statues of Pasquino and Marforio, as well as various treatises on the ceremonies which are performed in St. Peter's Church and in the pontifical chapel of the Vatican on great festival days.

When Pius VII. took possession of Rome, Cancellieri was appointed director of the printing-press of the Propaganda. In 1804 he accompanied Cardinal Antonelli to Paris, on the occasion of Napoleon's coronation. He continued to write works of antiquarian erudition until 1826, when he died at Rome. The printed works of Cancellieri exceed 160 in number, and there is a list of his inedited works, amounting to 80.

(Tipaldo, *Biografia degli Italiani Illustri.*)

CANCER, called also *carcinoma*, is one of the diseases called malignant, on account of its incurable character. Three principal forms are recognised by pathologists having different physical characters, but all having a tendency to terminate in an open sore. These three forms are called, 1, scirrhus; 2, encephaloid cancer; and 3, scoleoid cancer. These forms are known by a variety of other names. The first is hard and resistent, the second soft and brain-like, the third gummy and arranged in cells.

The rapidity of the progress of these tumours to open cancer is different in every different case. The carcinomatous ulcer consists of a large chasm which is formed in the substance of the part in which the malady is seated, the chasm being produced partly by a sloughing and partly by an ulcerating process. The opened tumour is now found to consist of cells. As these cells burst and pour out their contents, which consist of a pulpy matter of different degrees of consistence and of various colours, the surrounding parts are irritated by an excoriating ichor. This discharge sometimes takes place with a celerity which would induce the belief that it can scarcely result from the process of secretion. When the diseased actions have in a manner exhausted themselves, an attempt at reparation appears to take place, analogous to those which, in other cases, leads to the restoration of a part from a diseased to a healthy state. New flesh is formed, but instead of healthy muscle it consists of a fungus of peculiar hardness, the formative vessels communicating to the new product the same qualities as to the tumour previously generated by their morbid action. This diseased fungus occasionally even cicatrises, and so arrests for a time the progress of the dis-

ease. But the morbid action, though mitigated or suspended, is not subdued; it soon recommences its destructive course, and the part never returns to a healthy condition. In the meantime secondary tumours take place, from the removal of the diseased cells from one part of the body to the other, the cells acting as seeds or germs of the secondary disease.

This disease is seated chiefly, though not exclusively, in parts which have a glandular structure. It is more frequent in the female than in the male, in the proportion of five to two. Its most common seat in the female is the breast, and in the male the lips. The causes of the disease are involved in much obscurity.

In the treatment of cancer, it cannot be too generally known that hitherto all general remedies have failed. The only chance that a person has of continuing to live, after the disease has once appeared, is immediately to remove it with the knife; but even this is useless if secondary tumours in other parts of the body have appeared. Where unfortunately secondary tumours have occurred, the only treatment that can be pursued is palliative. Internally and externally sedatives to allay the pain and irritation of the system should be had recourse to. Little or no dependence is to be placed, even for relief of the pain, on the many vaunted remedies for this terrible disease.

The lower animals are subject to the same forms of this incurable disease as the human being.

CANCER, *the Crab*, the fourth constellation of the zodiac, being one of those in Ptolemy. From the end of January to that of April, its time of coming on the meridian in this country varies from midnight to six in the evening. In the obsolete and useless division of the ecliptic into signs, Cancer is the part of that circle between 90° and 120° from the vernal equinox. The surrounding constellations are Hydra, Leo, Lynx, Gemini, and Canis Minor.

CANCER, TROPIC OF. [TROPICS.]

CANCER. [CRAB.]

CANCROMA. [BOAT-BILL.]

CANDAHAR. [AFGHANISTAN.]

CANDEISH, a province of Hindustan, between 20° and 22° N. lat., and 73° and 77° E. long. It is bounded N. by Malwa, E. by Berar and Gundwana, S. by Aurungabad and Berar, and W. by Gujerat. Its length from E. to W. is about 210 miles, and its average breadth about 80 miles.

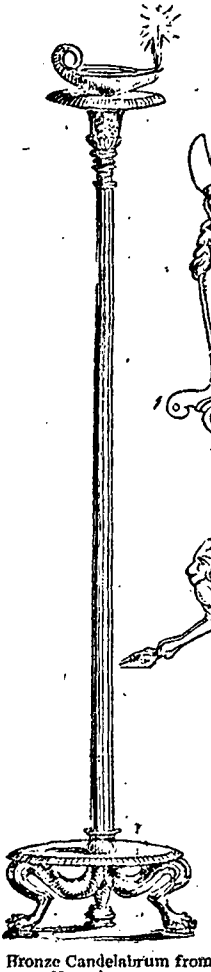
Candeish is generally a level country, but is nearly surrounded by mountains. Low sterile hills are scattered over the plain of Candeish, but with this exception the province is very fertile. In addition to the Taptee and the Nerbudda, the province is watered by several copious streams, which flow from the table-land and fall into the Taptee.

In 1818, Candeish, then among the possessions of Holkar, was ceded to the British, and is now included in the presidency of Bombay.

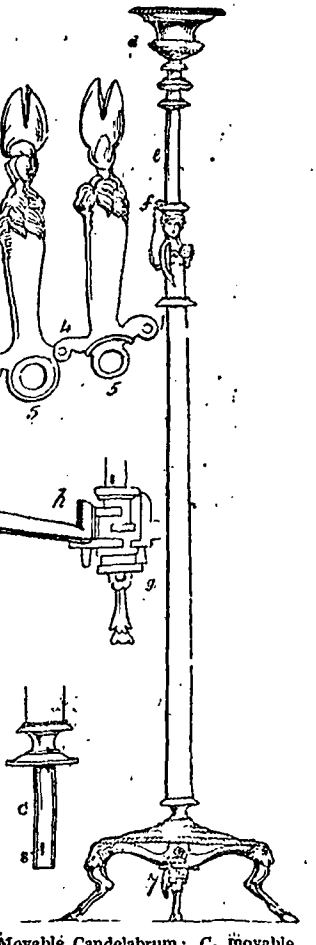
(Mill's *History of British India*; Hamilton's *East India Gazetteer*.)

CANDELA'BRUM, an article of furniture used by the Romans both in their public edifices and private dwellings. The candelabra used in public edifices were usually of a greater size, and made with a large cup at the top to receive a lamp or sufficient unctuous material to feed a large flame. The annexed cut represents two bronze candelabra, one of a simple form, the other in some measure complicated.

The base is formed of three goats' legs, each having a ring at each end, 5, 5, 5. The centre piece is attached to the side pieces by rivets, 3, 4,



Bronze Candelabrum from Herculaneum.



Movable Candelabrum; C, movable shaft; I, connecting joints of the legs.

round which these rings are allowed to turn, so that the three lie either parallel when the candelabrum is taken to pieces, or may be made to stand at equal distances in the circumference of a circle; in which case the two exterior rings lap over each other, and are united by a movable pin. The end rings, 5, 5, 5, which are placed at different heights, as shown at *h*, will then be brought into the same vertical line; and the round pin *e*, which terminates the stem, passes through them and is secured by a pin, 7, passing through the hole, 8, which keeps the whole tight. The shaft is square and hollow, and surmounted by two busts. Within this lower shaft a smaller shaft, *e*, plays up and down, and is fixed at any desired height by the pin *f*.

In the Townley collection, in the British Museum, there are several bronze candelabra from 12 inches in height to upwards of 5 feet, and of various patterns. They are mostly flat on the top, although some are formed with a cup-like top, as if for a large flame. One has a spike to receive a clay lamp, with a hole in the centre. Two exquisite works of candelabra, carved in marble, are preserved in the Radcliffe Library, Oxford.

CANDIA, the *Kirid* of the Turks, the *Kriti* of the modern Greeks, and the ancient *Creta*, is a large island in the Mediterranean, situated immediately south of the Grecian Archipelago, between 34° 54′ and 35° 42′ N. lat., 23° 28′ and 26° 19′ E. long. Its length from E. to W. is 161 miles. The breadth is very unequal; between the town of Candia and Cape Matala, the most southern point in the island, it is about 50 miles; between Istrona and Hiempetra, only 7 miles; and between Retimo and Sphakia, about 10 miles.

The island is connected with the most ancient traditions of the Greeks. Here, in Mount Dicte, their chief god, Zeus (Jupiter), was born and brought up, and hither he carried the Phœnician princess Europa. In the age before the Trojan war, Creta was ruled over by a just and wise prince named Minos, celebrated for the laws which he introduced among his subjects, and for his navy, with which he swept the pirates from the Grecian seas. Near his capital, Cnossus, was the famous labyrinth built by Dædalus, with which the story of the Minotaur, Theseus, and Ariadne is connected. (Strabo, x. p. 328; Thucyd. 1. 4; Aristot. 'Polit.' ii.) Idomeneus, a grandson of Minos, was at the siege of Troy; on his return home he was driven away by his subjects, and went and settled in Italy. After this time Gortys, or Gortyna, a city near the foot of Mount Ida, rose into eminence, and eventually became the capital. The island is said in ancient times to have contained a hundred flourishing cities. The inhabitants were famous bowmen, and were frequently employed as mercenary soldiers by other nations. They were also notorious for lying, a characteristic to which St. Paul alludes in his Epistle to Titus. In 67 B.C. Creta was subjected to the Romans by Quintus Metellus, surnamed Creticus, and it formed a part of the Roman province Cyrenaica till 823, when it was taken by the Saracens, who built Candia, or Khandia, which has ever since been the capital. Nicephoras Phocas retook the island in 961. On the capture of Constantinople by the Franks, Baldwin I. gave Candia to Boniface, Marquis of Montserrat, who sold it to the Venetians in 1204. For more than four centuries the Venetians held it, and under their sway the island prospered. In 1645 the Turks landed with a force of 50,000 men, and besieged and took Canea. In the following year they took Retimo, and in 1648 commenced the siege of Candia. This siege, the most famous in modern history, lasted twenty years. The Venetians strained every nerve for the defence, and it was not till all their means were exhausted that they surrendered the town, Sept. 27, 1669. Since that time the island has remained in the hands of the Mohammedans. In 1821, and for several subsequent years, the native Greek population maintained a sanguinary warfare with their Turkish masters, in the hope of shaking off their oppressive yoke. In this struggle they failed. According to a decision of the allied powers, the island was made over to Mehemet Ali, in 1830, to indemnify him for his losses in the revolutionary war of the Morea. He held it till 1840, when, by a convention of the great European powers, except France, it was restored to Turkey, from which another insurrection in 1841 and 1842 failed to set it free.

The island is traversed in its whole length by a mountain-range, in the eastern part of which is Mount Siti, the ancient Dicte, and in the central part Mount Psiloriti, the ancient Ida, rising to the height of 7200 feet; while the western part of the range is called the Sphakiote Mountains from the Sphakiotes, a hardy Greek tribe, who live in the valleys and gorges along the south-western coast. The main chain sends out off-shoots to the north and south; those on the northern side slope down gradually towards the sea, inclosing many plains and valleys of great fertility, and forming by their projections the numerous bays and gulfs with which the northern coast is indented. The southern off-shoots descend abruptly, and present a steep rocky and arid surface, terminating in a precipitous coast, provided with no good harbours. Mount Ida sinks down rapidly towards the south-east into an extensive plain, watered by the Hiero-pótamo, the ancient Lethæus, which, rising in the mountainous district of Arkadioti, flows westward into the sea a few miles south of Mount Ida. The southern boundary of this plain is a range which, springing from the main chain near the source of the Hiero-potamo, runs S.W., and terminates in Cape Matala.

North of the principal range of mountains, the island contains extensive woods, pastures, and meadows, and produces corn, wine, oil, opium, liquorice, flax, cotton, silk, carobs, oranges, lemons, dates, and other southern produce. Besides the common domestic animals, game, wild sheep, chamois, goats, bees, and fish are very numerous and abundant. About 600,000 sheep and goats are fed on the mountains; their wool is coarse, their milk is made into cheese. There are in the island about 50,000 horned cattle, which are used chiefly for ploughing: the milk of cows is not used, there being a prejudice against it. The habi-

tations of the peasantry are rude in the extreme, and their clothing consists of coarse cottons, linens or woollens, manufactured by each household. The chief manufacture is soap, which is highly esteemed all through the Levant. The principal exports are oil and soap; the imports are some British and Austrian manufactured goods and metals, colonial produce, and corn. Every article produced on the island pays one-seventh to the government. In lieu of a tax on silk, the mulberry-trees are rated. There are several small islands round the coast, of which the principal are Standia, on the north, and Gozzi, on the south. The climate is warm, and in the low valleys unhealthy in the autumn. The sirocco, the common scourge of the Mediterranean, is often severely felt.

Candia is divided into eight bishoprics, including the see of the metropolitan archbishop of Gortyna; into three *sanjaks*, or provinces—Candia, which is governed by a pasha of three tails, Canea, and Retimo, each governed by a pasha of two tails; and into twenty *mukattas*, or districts, each governed by an *aga*, who receives the taxes and the tithes of the mosques. In ancient times the island seems to have been very thickly peopled. Under the Venetians, the population is said to have been about 1,000,000; in 1821 it amounted to 260,000, and it is now, according to a census taken at the instance of the archbishop, but little over 158,000, four-fifths of whom are Greeks.

The principal towns and ports are on the northern coast of the island. Canea, or Khania, on the Gulf of Khania, is the capital of the western sanjak; it has a population of 8000, and a good harbour formed by a mole 1237 feet long, with a lighthouse at its extremity. The town is surrounded by old walls and deep ditches, and contains several mosques and Greek churches. It is the seat of a Greek bishop.

Suda, distant from Canea about 3 miles by land, on the Bay of Suda, has a harbour perfectly safe in all weathers.

Retimo, the capital of the central sanjak, and the seat of a Greek bishop, has 4000 inhabitants, and a small harbour formed by a mole.

Candia, about 40 miles E. of Retimo, the capital of the island, is much decayed, since the time of the Venetians. The fortifications are still in tolerable repair, but the houses of the town are falling to ruin; and the harbour, which is formed by a mole, is blocked up with sand to such a degree that only vessels drawing less than 8 feet water can enter. Ships loading from Candia anchor in one of the three ports of Standia, an island about 7 miles N.N.E. of the town. Candia has 12,000 inhabitants; it is the residence of the Greek archbishop of Gortyna, and of the chief pasha of the island. Not far from it are the ruins of the ancient Cnossus.

Spinalonga, on the Gulf of Mirabel, has a good harbour, but the entrance is subject to sudden squalls. A few miles south of this is the harbour of Ayio-Nicola, the best harbour in the island next to Suda, but it is not frequented. The most noted town on the south coast is Sphakia, the chief town of the Sphakiotes. At Hagio-deka, a village near the Hiero-potamo, are the ruins of Gortyna, and a cavern of great extent in a part of Mount Ida. This cavern has been sometimes taken for the labyrinth of Cnossus, of which no trace remains.

(Daru, *Histoire de Venise*; Botta, *Storia d'Italia*; Sieber, *Reise nach Kreta*; Macgregor's *Statistics*.)

CANDLE. Candles are commonly made of tallow; but wax, spermaceti, stearine, palm oil, and other materials, are also employed. A wick mostly formed of cotton fibres, passes through the candle. The action of this wick is merely mechanical, serving in the first instance by the heat given out during its combustion to fuse that portion of the tallow or wax to which it is more nearly applied, and then to take up through its fibres the fluid matter, which is thus prepared by minute division for decomposition and combustion. In order to ensure the proper burning of the candle, the wick requires to bear a given relation to the thickness of the candle.

There are two ways of making candles, which are distinguished as *dipped* or *mould* candles, according to the method employed. Dipped candles are made as follows:—Wicks made of spun cotton are selected of a size proper for the intended diameter of the candle, and are cut into the requisite lengths by a simple and convenient machine, being first doubled and twisted so as to leave a loop at one end. Into this loop a smooth cylindrical stick half an inch in diameter and about three feet long is inserted, and several of the cottons or wicks, being so treated and disposed at regular intervals on the stick, are ready to receive their external coating of tallow. The number of cottons ranged upon each stick varies according to the size of the candles to be made. The tallow, being previously melted and strained, is placed in a kind of trough, into which the wicks are dipped three times for the first 'lay;' after being kept a short time over the trough for the wicks to drain, the sticks are placed on a rack from which the candles hang freely, and are thus allowed to harden. The same process is repeated a second and a third time and oftener, according to the required weight of the candles. Where large quantities are to be made, several sticks are placed together in a kind of frame, and are lowered into the melted tallow and raised again by machinery, a counter-weight being used in order to indicate when the wicks have taken up the required quantity of tallow.

Mould candles are made in cylindrical moulds of pewter, one end of which is smaller than the other to allow of the easy removal of the candles.

From 10 to 16 of these moulds are placed together in a wooden frame, so that their larger ends terminate in a kind of trough common to the whole; the wicks are inserted and kept firmly in their proper places in the centre of each cylinder by strong wires. The frame being then placed with the trough uppermost, the moulds are filled with melted tallow and are placed in the air to cool, after which the wires by which the wicks are fixed are withdrawn, the superfluous tallow

is removed from the trough, and the candles are pulled out of the moulds. A machine has been invented, whereby mould candles are now made with great rapidity.

The process used in making wax candles is different. The wicks being cut and twisted in the manner above described, a set of them is suspended over a basin of melted wax, which is taken up by a large ladle and poured from time to time on the tops of the wicks, and the melted wax running downwards adheres to and covers the wicks throughout their length. This is repeated until a sufficient weight of wax has been gathered upon each. After the candles are sufficiently cooled, they are rolled upon a smooth table in order to give them a perfectly cylindrical form, and they are then polished.

Recent patents have been obtained for candles made of palm oil, which is solid in our climate. Stearine and margarine are also employed for this purpose. Palmer's candles are distinguished chiefly by the use of a wick which, bending out of the flame as it burns, consumes without the necessity of snuffing. But the chief feature in Palmer's patents is the use of a candlestick which maintains the candle always at the same height. There is a spring beneath the candle, which presses it upwards with such force, that the top of the candle is always maintained on a level with the top of the candlestick, the wick alone protruding. The construction of candles with wicks so contrived as to require no snuffing has often engaged the ingenuity of practical men; but in most cases the attempts have failed. A kind of candle lamp was introduced a few years ago, in which solid tallow is placed within a lamp, and melted as it is required for burning.

In the customs' returns, candles and soap are entered under the same heading, so that it is difficult to say what is the value of each item. In 1845, the exports of the two conjointly amounted to 16,763,826 lbs., valued at 264,620*l*. The tallow imported in the same year amounted to 1,194,284 cwt.

CANDLEMAS, the popular name for the Feast of the Purification of the Virgin Mary, February 2nd, derived from the lights which were then distributed and carried about in procession.

CANDOLLE, DE. [De Candolle.]

CANDY, formerly the capital of the king of Candy's dominions, in Ceylon, situated about 65 miles' direct distance E.N.E. from Colombo, in 7° 20′ N. lat., and 80° 50′ E. long. The population has been estimated at about 3000.

The city stands in the midst of steep and lofty hills covered with jungle, at the head of an extensive valley, and about 1467 feet above the level of the sea. It is surrounded by a mud wall, but its principal defence from hostile attacks consist in thick thorn hedges, which are drawn round the hills like lines of circumvallation, leaving only narrow passes. The city is also nearly surrounded at the distance of three miles by the River Mahawelly Ganga.

The principal street is on the declivity of a hill, and is nearly two miles long, but built in a very straggling manner. The houses are of mud, and only one story high, standing on foundations raised about five feet above the level of the street. The houses of the chiefs are tiled and whitewashed, the others are thatched. The palace covers a considerable space, and contains a great number of rooms. Candy was captured by the British in February, 1803, but they were compelled to evacuate it in the following June. The king of Candy was deposed in 1815 by his own subjects, and the British were invited to take possession of his territories, which they have retained ever since.

CANDY-TUFT. [Iberis.]

CANE. [Calamus.]

CANEA. [Candia.]

CANELLA ALBA, a tree growing on the coast of many of the West India Islands, particularly Jamaica, also on stony hills, and in woods of the main land of South America. The bark of the young branches of this tree, freed from its outer rind, is the canella alba of the shops. Owing to its white appearance, it has received the name of white cinnamon, which it also resembles in smell.

CANES VENA'TICI, *the Hounds*, a constellation added by Hevelius, who called the nearest to the pole Asterion, and the other Chara. They are held in a string by Boötes, and are surrounded by Bootes, Coma Berenices, and Ursa Major.

CANG or KEA, a large wooden collar used as an instrument of legal punishment by the Chinese. It is a species of walking pillory, fitting close round the neck of the culprit, and of such a weight that he can carry it, though with pain and difficulty. The weight is proportioned to the nature of the offence; but the cang most commonly in use weighs from 50 to 60 lbs.

CANGE, CHARLES DUFRESNE, SEIGNEUR DU, was born at Amiens in 1610. He studied law, but after a time gave himself up entirely to history and philosophy. His first work was 'Histoire de l'Empire de Constantinople sous les Empereurs François,' fol., 1657. But he is better known for his 'Glossarium ad Scriptores Mediæ et Infimæ Latinitatis,' 3 vols. fol.; afterwards republished in 6 vols. in 1733, to which were added 4 more vols. by Carpentier. A new edition has been published within these few years, 'cum Supplementis Integris D. P. Carpenterii, et Additamentis Adelungii et aliorum, digessit G. A. L. Henschel,' 6 vols. 4to. It is a most useful work for the understanding of the numerous writers of the middle ages, and for the explanation of old charters, and other legal documents of an early date. Ducange was one of the editors of the 'Corpus Historiæ Byzantinæ.' He died in 1688. [Byzantine Historians.] Louis XIV. bestowed a pension of 2000 francs upon his children. He wrote also, 1, 'Historia Byzantina illustrata,' fol., 1680, being an historical description of Constantinople and its monuments, with biographies and genealogies of several distinguished families of that city; 2, 'Glossarium ad Scriptores Mediæ et Infimæ Græcitatis,' Paris, 1688, 2 vols. in fol., a work very necessary for those who are studying the

lower Byzantine writers. Ducange is often quoted by the name of Dufresne.

CANIS. [Dog.]

CANIS MAJOR, *the Greater Dog*, a constellation which contains Sirius, the brightest star in the heavens, called also the Dog Star. This constellation is directly found by the bright star Sirius, which is in the continuation of the line drawn through the belt of Orion. The surrounding constellations are Argo, Monóceros, Orion, Lepus, and Columba Noachi. At the end of January, Sirius is on the meridian at midnight.

CANIS MINOR, *the Lesser Dog*, a constellation situated above the Greater Dog, and distinguished by a remarkable star of the first magnitude, Procyon. To find it, draw a line through Orion's belt and Sirius; a perpendicular to this line from Sirius upwards will pass through Procyon, which is too large a star to be mistaken. It is also nearly in the line joining Sirius and Pollux, about midway between them.

CANKER. This term is applied, perhaps not with strict propriety, to a very serious disease of the foot of the horse. The horn having been separated from the sensible portion of the foot, a fungous substance is produced instead of new and healthy horn. The treatment, however is exceedingly simple. Every portion of horn that has begun to detach itself must be removed. Some superficial caustic must then be applied in sufficient quantity to repress the growth of the fungus, and to rouse the exposed surface to healthy action, but not to eat into and corrode the foot. The butter (protochloride) of antimony is the best agent for accomplishing these purposes; for, being speedily decomposed by the moisture of the part, it can only act as a superficial caustic. The fungus having been repressed, the Friar's Balsam may succeed as a mild stimulant to the secretion of good horn. No ointment should touch the cankered foot; but pledgets of soft and clean tow should be placed over the sore, and bound firmly upon it, making as equable a pressure on every part of it as can possibly be effected. The foot should be dressed at least once in every day, and kept as dry as circumstances will allow.

Inflammation of the internal part of the ear of the dog will sometimes produce a fungous ulceration, to which also the term *canker* has been applied. A dog may be observed to be continually shaking his head, or scratching his ear, or carrying his head on one side. If the part is examined, some degree of redness or enlargement of the irregular projections on the inside of the ear will be seen. This will generally yield to a few washings with warm soap and water; but, should actual ulceration have commenced, a drachm of the extract of lead should be added to half a pint of a decoction of the heads of white poppies, and this substituted for the soap and water. The inflammation beginning to subside, a scruple of alum should be added to this lotion, in order to dry up the ulcer; but nothing stronger than this should ever be applied, and even the alum should be cautiously added, in proportion as the dog is able to bear it. Purging and alterative medicines will be useful auxiliaries.

If the case is obstinate, and the ear begins to be extensively ulcerated, and the ulcer spreads over the flap of the ear, a seton should be inserted in the poll precisely between the ears, and extended from ear to ear. All water-dogs are particularly liable to this species of canker.

There is another variety of canker belonging to the flap of the ear, to which the hound and the pointer are especially subject. It is either the consequence of that which has been just described, or exists independently of it. A sore appears on the edge of the flap of the ear of a true cankerous nature, and corrodes the very cartilage. The treatment of this also is simple and effectual. The ears, or at least the diseased ear, must be confined by a cap of leather or strong calico; for, while the dog can flap and beat his ear, it is evident that the sore can never heal. This being contrived, a strong ointment of alum or white vitriol (sulphate of zinc), or both combined, should be well rubbed on the sore morning and night. The simple alum ointment should first be tried.

Sportsmen too often *round* the ears of the dog; that is, they cut off the diseased parts. This disfigures the animal, and is rarely effectual. Either a new ulcerative inflammation is set up by the operation, or, the whole ear having been inoculated and empoisoned by the discharge from the old wound, the peculiar ulcer of canker speedily appears again as extensive and as obstinate as before.

CANKER-BRAND. [Uredo.]

CANNA. [Antelope.]

CANNA, a genus of plants belonging to the natural order *Marantaceæ*. *C. edulis* has smooth leaves and stems coloured at the base, the roots tuberous and large. This is one of the species of the order the rootstock of which is used for making arrow-root. Nearly all the species contain starch in the rootstock, which renders them fit to be used as food after being cooked. The starch is separated by tearing the rootstock in pieces, and submitting it to the action of water. The water with the starch suspended is poured off from the ligneous portion of the rootstock, and the starch is afterwards allowed to subside. (Loudon, *Encyclopædia of Plants.*)

CA'NNABIS, the genus of plants that yields the substance called hemp. *Cannabis sativa*, or common hemp, is a plant, nearly allied botanically to the nettle, with which it even agrees in its general appearance. It possesses a tough kind of woody tissue, which is manufactured into linen and cordage, and contains a narcotic secretion of great energy. Natives of the east avail themselves of this to make an intoxicating drink.

This is the only species known; it is said to be a native of Persia, and is certainly wild among the hills and mountains north of India, as well as common every where in the gardens of the natives throughout Asia. It is now universally distributed over the north of Europe.

CANNÆ. [Hannibal.]

CANNES. [Var.]

CANNIBALS, *Anthropóphagi*, or man-eaters. In the Odyssey of Homer we have the story of Polyphemus devouring human flesh; and, in He-

rodotus, the Masságetæ (i. 216) are said to eat their aged parents. Modern facts, the truth of which is put beyond all doubt, confirm the statements of Herodotus as to cannibalism in Asia (iii. 99).

In the middle ages, these stories of cannibalism were wonderfully enlarged. Thus, during the Crusades, the Saracens said the Christians ate human flesh, as well as the unclean flesh of swine, while the Christians on their side maintained that the Saracens ate men, women, and children, and were particularly fond of a sucking Christian babe torn fresh from the breast of its mother. The giants and ogres of our nursery tales are only the Saracens of the holy wars seen through the magnifying-glasses of tradition and romance.

The old travellers abound in stories of cannibalism which we may almost invariably pronounce to be false; but Marco Polo, the Venetian, who resided in China and traversed the Indian seas in the 13th century, in speaking of a people in Sumatra (the Battas), and of the fierce inhabitants of the group of islands called the Andamans, relates no more than has been confirmed by modern travellers. The New Zealanders eat their captives taken in war, and there are still native tribes in Guiana, in South America, who eat their prisoners. ('London Geog. Journal,' vol. ii. p. 70; but compare vol. ii. p. 240.)

(*History of Sumatra*, by William Marsden, F.R.S., p. 300; *New Zealanders*, in the *Library of Entertaining Knowledge*.)

CANNING, GEORGE, was born on the 11th of April, 1770, in London. His descent on the paternal side was from an ancient family. He was first sent to Hyde Abbey School, near Winchester, whence he was removed to Eton. He had begun to write English verses when very young, and at Eton, in his sixteenth year, he formed the plan of a periodical work called 'The Microcosm,' which was written by himself and three schoolfellows, and published at Windsor in weekly numbers from November 1786 to August 1787. In 1787 Mr. Canning was entered, as a student of Christ Church, Oxford, where he gained some academical honours by his Latin poetry. It has generally been stated that it was by the advice of Sheridan that Mr. Canning, who had entered of Lincoln's Inn, gave up the study of the law, and devoted himself to a political career. Mr. Canning accepted the proposals of the Tory party, and was brought into parliament by Mr. Pitt in 1793. In January 1794, he first ventured to address the house, and, although he rather too obviously imitated the style and manner of Mr. Burke, he showed such powers as commanded respect and general attention. In 1795 he opposed parliamentary reform.

In 1796 Mr. Canning became Under-Secretary of State, and at the general election in that year he was returned for the treasury borough of Wendover, Buckinghamshire. In the autumn of 1797 Mr. Canning, in conjunction with some social and political friends, started a paper styled 'The Anti-Jacobin,' the object of which was to attack the writers of the day who advocated the doctrines of the French Revolution.

When the subject of the Irish Union was brought before parliament, Mr. Canning repeatedly spoke at great length and with much effect in support of that measure. In 1799 he was appointed one of the commissioners for managing the affairs of India. He married in 1800 a lady who brought him a fortune of 100,000*l*. On the dissolution of Mr. Pitt's cabinet in 1801, Mr. Canning retired with the rest. On Mr. Pitt's return to office, in 1804, Mr. Canning was named Treasurer of the Navy. Mr. Pitt died in January 1806: in February the ministry were changed, and Mr. Canning was succeeded by Mr. Sheridan as Treasurer of the Navy. In April 1807, Mr. Canning again accepted office, and was appointed Secretary of State for Foreign Affairs. Of all the departments of government this was probably the one he was best qualified for. On the 21st of September, 1809, Mr. Canning fought a duel with his colleague Lord Castlereagh. The quarrel mainly arose out of the Walcheren expedition, and led to the resignation of the Duke of Portland and Mr. Canning, as well as of Lord Castlereagh. Mr. Canning had always been in favour of Catholic emancipation, and on the 21st of April, 1812, he eloquently supported Mr. Grattan, who moved that the Catholic claims should be referred to a committee of the whole house. Whoever looks back through the long history of Catholic emancipation will see how largely the final success of that measure was owing to the untiring exertions and eloquence of Mr. Canning, who unhappily died a short time before it could be carried, and left that honour to others who had been through life its most violent opponents.

Parliament being dissolved in 1812, Mr. Canning was elected for Liverpool. In October 1814, he was sent ambassador to the Prince Regent of Portugal. In 1816 he became President of the Board of Control. During the session of 1821 he again supported the Catholic claims with his usual warmth; and in the session of 1822 he again opposed parliamentary reform. In the course of the latter year he was named Governor-General of India, and was at Liverpool to take leave of his friends and constituents, when Lord Castlereagh (then the Marquess of Londonderry, and at the head of foreign affairs) committed suicide on the 12th of August, 1822. On the 16th of September following, Mr. Canning, who had been entreated to give up his much more profitable Indian place, was again appointed Secretary of State for Foreign Affairs. Mr. Canning turned his attention to the new world, and came to the resolution to send out consuls to the principal states of Spanish South America. This was a preliminary to the recognition of the independence of those new governments which, though totally unsettled, were in fact free of Spain.

In 1827, the Earl of Liverpool, the premier, becoming incapacitated, Mr. Canning was appointed his successor. No sooner was this appointment announced, than the Lord Chancellor (Eldon), the Duke of Wellington, Earl Bathurst, the Earl of Westmoreland, Viscount Melville, Lord Bexley, Mr. (now Sir Robert) Peel, with various members of the household, resigned in a

manner which showed decided hostility to the new premier. Mr. Canning commenced a negotiation with the Whigs, which ended in the admission of several of that party to office, and in the promise of support from others, at the head of whom were Mr. Brougham, Mr. Tierney, and Sir Francis Burdett. The new premier repeated his determination to oppose parliamentary reform, and declared himself hostile to the repeal of the Test and Corporation Acts. On the 6th of July, a treaty combining England, France, and Russia, for the settlement of the affairs of Greece, was signed at London. This was the last of Mr. Canning's public acts: one of the first poems he wrote in the enthusiasm of youth was a lament on 'The Slavery of Greece.' About the middle of July, Mr. Canning retired to the Duke of Devonshire's villa at Chiswick, where he died, Aug. 8, 1827.

CANNON. The invention of cannon is noticed under ARTILLERY, and matters relating to their use under GUNNERY. Cannon are not cast hollow, it being found that if so cast they would not, owing to the irregular cooling of the metal, be equally strong in every part. Being cast solid, the outside cools first, with a close sound grain, and all the porous or spongy parts of the metal are found in the centre. This is subsequently turned or bored out in an engine-lathe, which leaves the inner surface perfectly true, and the bore of the requisite diameter. Ordinary cannon are loaded at the muzzle, and fired by means of a touch-hole in the breech; but cannon have been contrived to load at the breech, by means of a revolving plug much resembling an ordinary watercock. However well contrived and accurately made, all such contrivances must be liable to work loose, and ultimately to become dangerous through the escape of the powder.

CANNSTADT. [NECKAR—*Krçis.*]

CA'NO, ALONSO, a very celebrated Spanish painter, sculptor, and architect, was born at Granada, in 1601. He was educated in Seville, and he studied sculpture and painting there. Cano is called the Michel Angelo of Spain. As early as 1639 he had earned such celebrity that he was appointed painter to King Philip IV. of Spain, and had the superintendence of various architectural works in the royal palaces of Madrid and in the city. Cano died at Granada, in 1667, leaving a numerous school, but he had not a single scholar who approached him in ability. His works, which are conspicuous for vigour of design, richness of colour, and boldness of execution, are very numerous; there are many at Seville, Xeres, Cordova, Madrid, in the Escurial, at Toledo, Alcalà de Henares, Cuenca, Avila, Valencia, Murcia, Malaga, and Granada, where, in the church of San Diego, a Conception of the Virgin with angels is considered his masterpiece.

Cano was of a singular disposition and of a violent temper, which on more than one occasion placed him in great danger from the Inquisition. He is said on his death-bed to have refused to take the crucifix presented to him by the priest, on account of its bad workmanship.

(Palomino, *Museo Pictorico*, &c.; Cumberland, *Anecdotes of Eminent Painters in Spain*; Cean Bermudez, *Diccionario Historico*, &c.)

CANON (*κανὼν*), a rule. The several senses in which this word is used are all derivatives from its original sense, of something straight, as a straight piece of wood, or a reed or cane; such a plant as produces straight and even shoots, adapted to the purpose of a rule; or, as we say, a ruler, used in drawing straight lines. The word canon has generally been employed in mathematics to mean a set of mathematical tables. It is also used in music, and to express certain grammatical rules formed by critics. But it is more particularly appropriated in the sense of a *rule* in respect of things ecclesiastical.

Canon is also used for the *rule* of persons who are devoted to a life strictly religious. It is also applied to the *book* in which the rule was written; and since in such a book it was not unusual to enter the names of persons who had been benefactors to the community, which names were recited from time to time with honour, and they were reputed to be holy persons or saints (sancti), the entry of such names formed what is meant by *canonisation*, though in later times the term became confined to such persons who had their names enrolled in the great volume of which the pope was the sole guardian. It was also applied to *persons* who lived under a rule: as the Augustinian canons, persons who adopted the rule of Saint Augustine. The regular canons were persons who were confined to their own monasteries, where they practised their rule; the secular canons were persons living according to some prescribed Christian form and order, but who nevertheless visited the laity, and discharged the various offices of Christianity for their edification. As parish churches arose, the necessity for such visits from the canons who were attached to cathedral churches was diminished. But the institution was spared at the Reformation, and continues to the present day. These canons are sometimes called prebendaries, a name derived from their being endowed with land or tithe, as many of them are, which endowment is called a prebend. The canons have stalls in the cathedral churches, which are generally called prebendal stalls. They form the chapter in the expression the dean and chapter, and are still nominally what they actually once were, the council of the bishop for the administration of the affairs of his diocese.

From *canon* is formed *canonical*, which occurs in many ecclesiastical terms, as *canonical punishment*, *canonical obedience*, and *canonical scriptures*. The canonical scriptures are the usually received books of the Old and New Testament.

CANON LAW, a collection of ecclesiastical constitutions for the regulation of the Church of Rome, consisting for the most part of ordinances of general and provincial councils, decrees promulgated by the popes with the sanction of the cardinals, and decretal epistles and bulls of the popes. The earliest canons are the apostolical canons; and, though the fact of their being the work of the apostles does not admit of proof, there is no doubt that they belong to a very early period of ecclesiastical history.

These canons were enlarged by general councils. The canons of the four councils of Nice, Constantinople, Ephesus, and Chalcedon (which were held in the fourth and fifth centuries), received the sanction of Justinian, A.D. 545. ('Novel.' 131, cap. 1.) Collections of these canons were made at an early period. The most remarkable of these collections is the 'Codex Canonum,' which was compiled by Dionysius Exiguus, a Roman monk, A.D. 520. This body of constitutions, with the capitularies of Charlemagne and the decrees of the popes from Siricius (A.D. 398) to Anastasius IV. (A.D. 1154), formed the principal part of the canon law until the twelfth century.

A collection of the decrees made by the popes and cardinals was begun by Ivo, bishop of Chartres, A.D. 1114, and perfected by Gratian, a Benedictine monk, in 1150, who first reduced these ecclesiastical constitutions into method. The work of Gratian is in three books, arranged in titles and chapters, and is commonly called 'Decretum Gratiani.' It comprises a series of canons and other ecclesiastical constitutions from the time of Constantine the Great, at the beginning of the fourth, to that of Pope Alexander III., at the end of the twelfth century. The Decretals, which were rescripts or letters of the popes in answer to questions of ecclesiastical matters submitted to them, and which had obtained the authority of law, were first published A.D. 1234, in five books, by Raimond de Renafort, chaplain to Pope Gregory IX. This work, which consists almost entirely of rescripts issued by the later popes, especially Alexander III., Innocent III., Honorius III., and Gregory IX. himself, forms the most essential part of the canon law. These Decretals comprise all the subjects which were then within the cognisance of the ecclesiastical courts, as the lives and conversation of the clergy, matrimony and divorces, inquisition of criminal matters, purgation, penance, excommunication, and the like. To these five books of Gregory, Boniface VIII. added a sixth (A.D. 1298), called 'Sextus Decretalium,' or the 'Sextus,' which is itself divided into five books, and forms a supplement to the first five books, of which it follows the arrangement. The Sextus consists of decisions promulgated after the pontificate of Gregory IX. The Clementines, or Constitutions of Clement V., were published by him in the council of Vienne (A.D. 1308), and were followed (A.D. 1317) by those of his successor, John XXII., called Extravagantes Johannis. To these have since been added some decrees of later popes, arranged in five books after the manner of the Sextus, and called 'Extravagantes Communes.' All these together, Gratian's Decretum, the Decretals of Gregory IX., the Sextus, the Clementines, and the Extravagants of John XXII. and his successors, form what is called the 'Corpus Juris Canonici,' or body of canon law.

The introduction of this new code gave rise to a new class of practitioners, commentators, and judges. The main object of the canon law was to establish the supremacy of ecclesiastical authority over the temporal power, or at least to assert the total independence of the clergy upon the laity.

The positions, that the laws of laymen cannot bind the church to its prejudice, that the constitutions of princes in relation to ecclesiastical matters are of no authority, that subjects owe no allegiance to an excommunicated lord, are among the most prominent doctrines of Gratian's Decretum and the Decretals. The encroachments of the church upon the temporal power were never encouraged in England. There was indeed a kind of national canon law, composed of *legatine* and *provincial* constitutions, adapted to the English Church. Of these the former were ecclesiastical laws enacted in national synods held under the Cardinals Otho and Othobon, legates from Pope Gregory IX. and Clement IV. in the reign of Henry III. The provincial constitutions were the decrees of provincial synods held under divers archbishops of Canterbury, from Stephen Langton, in the reign of Henry III., to Henry Chichele, in the reign of Henry V., and adopted also by the province of York in the reign of Henry VI.

With respect to these canons, it was, at the Reformation, provided by statute 25 Henry VIII. c. 19 (afterwards repealed by 1 Philip and Mary, c. 8, but revived by 1 Eliz. c. 1), that they should be reviewed by the king and certain commissioners to be appointed under the act; but that, till such review should be made, all canons, constitutions, ordinances, and synodals provincial, being then already made and not repugnant to the law of the land or the king's prerogative, should still be in force. No review took place in Henry's time; but under Edward VI. a new code of ecclesiastical law was drawn up by a commission appointed by the crown under the statute 3 & 4 Edward VI. c. 11. The confirmation of this was prevented by the death of the king; and, though the project for a review of the old canons was renewed in the reign of Elizabeth, it was soon dropped, and has not been revived.

So much of the English canons made previously to the statute of Henry VIII. as are not repugnant to the common or statute law is still in force in this country. It has, however, been decided by the Court of King's Bench that the canons of the convocation of Canterbury, in 1603 (which, though confirmed by King James I., never received the sanction of parliament), do not (except so far as they are declaratory of the ancient canon law) bind the laity of these realms. (Middleton *v.* Croft; Strange's 'Reports,' 1056.)

There are two kinds of courts in England, in which the canon law is under certain restrictions used:—1, the courts of the archbishops and bishops, and their officers, usually called ecclesiastical courts;—2, the courts of the universities of Oxford and Cambridge. In the first of these, the reception of the canon law is grounded entirely upon custom; but the case of the universities derives additional support from the acts of parliament which confirm the charters of those bodies. They are all subject to the control of the courts of common law, which assume the exclusive power of expounding all statutes relating to the ecclesiastical courts, and will prohibit them from going beyond the limits of their jurisdiction; and from all of them an appeal lies to the king in the last resort.

Henry VIII., in the twenty-seventh year of his reign, issued a mandate to the university of Cambridge, to the effect that no lectures on canon law should be read, and no degrees whatever in that faculty conferred in the university for the future. Degrees in canon law have ever since been discontinued in England.

CANON, in Music, a composition, generally vocal, sometimes in two, but commonly in more parts, in which the same melody, or subject, is given to every part. This melody is sung by each, after the leader, either on the unison, or the octave, or on the fourth and octave, &c., below, the voices severally following or answering each other at the expiration of one or more bars. There are various kinds of canons, designated *three in one, four in one, four in two, canon by augmentation, canon by diminution, canon recte et retro*, &c.; in some of which there are two melodies sung together instead of one. Cherubini's 'Perfida Clori,' Dr. Hayes's 'Come follow me to the greenwood tree,' the 'Non nobis, Domine,' of Birde, and Dr. Blow's 'Gloria Patri,' are celebrated examples of canons.

CANO'NICA, LUIGI, executed many public and private buildings at Milan. Among his principal works is the so-called Arena, or Amphitheatre, which, in regard to mere extent of plan, more than rivals the Colosseum at Rome. This singular edifice was begun in 1805, by order of Napoleon, who then sought to propitiate his Milanese subjects by embellishing their capital.

Canonica was employed on several other buildings at Milan. His chief works there are the Palazzo Orsini (the interior), the Casa Canonica, and the two theatres, Ré and Carcano. Canonica died at Milan, in February 1844, at the age of 82.

CANOPPI, ANTO'NIO, an Italian artist, died at St. Petersburg, in 1832, at the age of 59. His father, who was a civil engineer, educated him. Antonio soon relinquished science for art—construction for design. His first practice was as a fresco-painter, in which capacity he was employed by many Italian nobles to decorate their saloons. At Venice he became scene-painter at the Fenice theatre, and was afterwards engaged in the same capacity at Mantua. In consequence of the active part he took in the politics of the time, he was marked out by the French government as a very dangerous opponent, one that was at all events to be got rid of. Finding his personal safety threatened by the emissaries of Napoleon, Canoppi fled to Germany, where he found a protector and patron in the Russian ambassador, Prince Razumovsky, who proposed to him to establish himself in Russia. Accordingly he proceeded to Moscow in 1807, where he was fully employed for several years. The hall of the Senate, embellished by him, excited general and lively admiration; but that, and all his other labours of the kind in that capital, perished in the conflagration of 1812. Just before that event, Canoppi had sought an asylum at St. Petersburg, where he was readily engaged as scene-painter at the Imperial Theatre, in which service he continued till his death. Among the vast number of splendid architectural scenes which he produced for the theatre at St. Petersburg, those for the operas of the Zauberflöte and Semiramis were considered truly wonderful performances of their kind. His engagements with the theatre did not however so completely occupy Canoppi as to prevent his exercising his pencil upon smaller subjects and easel-pieces. These were chiefly either architectural compositions or architectural views, such as those of the Winter Palace (the one destroyed by fire in 1838), and the Etat Major at St. Petersburg; both which are or were in the Gallery of the Hermitage.

Besides having a considerable taste for literature, Canoppi wrote on various subjects appertaining to his art. There is one publication by him, which appeared in 1830, entitled 'Opinion d'Antoine Canoppi sur l'Architecture en général, et en spécialité sur la Construction des Théâtres Modernes.'

(*Khudozhestvennya Gazeta*, No. 22, Nov. 1837.)

CANO'PUS or CANO'BUS, a city of Egypt, on the coast, near the outlet of the western or Canopic branch of the Nile. It was 120 stadia from Alexandria by land, with which it was connected by a canal. In the time of Strabo (p. 801) it contained a great temple of Serápis.

CANOPUS is also the name of an Egyptian jar of a big-bellied form, with a cover or top representing a human head or that of some animal. These vessels are generally made of baked earth, sometimes of alabaster, and even of green basalt. Some have hieroglyphics on them, and are painted and glazed. Bodies of sacred animals are sometimes found in these vessels. Earthen jars of this form seem to have been used for keeping water cool, as they still are in Egypt.

CANO'PUS, a star of the first magnitude, in the rudder of the constellation Argo.

CANOPY, the covering over a niche used in Gothic architecture. They are usually elaborately carved, being intended not merely as a covering, but also as a mark of distinction. The various Gothic edifices in England present numerous examples of canopies.

CANOSA. [BARI, TERRA DI.]

CANO'VA, ANTO'NIO, was born Nov. 1, 1757, at Possagno, a village in the province of Trevigi, in the Venetian territory.

The father of Canova worked in marble, and was also an architect of some merit. At fourteen years of age Canova was taken by his father to Venice, and received into the studio of one Bernardi, surnamed Torretti; and afterwards, on Torretti's death, into that of his nephew, Giovanni Ferrari. Two baskets of fruit and flowers, carved in marble, are still shown at Venice as the earliest finished productions of Canova's chisel. About this time he commenced his first work of imagination, a group of Orpheus and Eurydice. Having now acquired some reputation, he was employed on some other works, chiefly busts; and he also modelled his group of Dædalus and Icarus—a work which may be said to have laid the foundation of his future fame. In 1779 the Cavaliere Zuliano was sent ambassador from Venice to Rome, and the senator Faliero gave the young sculptor a recommendation to that functionary. In October of that year he arrived at Rome. His

group of Dædalus and Icarus made a great impression there. Canova returned to Venice, but soon after established himself in Rome, having obtained a pension from his government of 800 ducats a year for three years. His first work after his settlement there was a group of Theseus and the Minotaur. He was selected to execute the monument of Ganganelli (Pope Clement XIV.) for the church of the SS. Apostoli in Rome. This noble work of art was exhibited in 1787, and established at once Canova's claim to the highest rank in his profession. Before this was completed, Canova had commenced his model of Rezzonico's (Clement XIII.) monument. This work is in St. Peter's, and is a splendid effort of genius, and of skill in execution.

From this time Canova was constantly employed, and chiefly on subjects of imagination. In portrait Canova was considered less successful; though none who have seen his Popes Ganganelli, Rezzonico, and Braschi, will deny his power even in that branch of his art.

Canova travelled when young over part of Germany, and was twice in Paris. At his last visit, he proceeded to England, chiefly for the purpose of seeing the Elgin Marbles, of which he always spoke in terms of the highest admiration. His reception in England gave him much satisfaction. On his return to Rome, he received a patent of nobility, and was created Marquis of Ischia.

In the latter part of his life Canova was busily occupied in modelling decorations for a church which he had built in his native place; and it was at Venice, where he was staying to be near this object of his interest, that he died in October 1822, after an illness of a very few days.

Of most amiable and conciliating manners towards his brother-artists and competitors for fame, Canova was also the liberal supporter and encourager of students of rising talent.

(Cicognara, *Storia della Scultura*, tom. iii.; Missirini, *Vita di Canova*, 8vo.)

CANTABRI, a people of ancient Spain, who lived east of the Asturians, in the region now called Las Montañas de Santander. They were a brave, secluded, half wild race, who long resisted the Romans, and were only finally subdued, together with the Asturians, by Augustus, B.C. 25. They revolted again after some years, but were defeated and nearly exterminated by Agrippa, B.C. 19. They gave their name to the Oceanus Cantabricus, now Bay of Biscay.

CANTACUZE'NUS, JOANNES. [Byzantine Historians.]

CANTAL, a department in France formed out of Haute-Auvergne, and named from the highest of its mountains, the Plomb-du-Cantal, is bounded N. by the departments of Corrèze and Puy-de-Dôme, E. by those of Haute-Loire and Lozère, S. by the department of Aveyron, and W. by those of Lot and Corrèze. It lies between 44° 37′ and 45° 25′ N. lat., 2° 2′ and 3° 20′ E. long.; it measures 68 miles from N.E. to S.W., and 57 from S.E. to N.W.; the area is 2251 square miles; the population in 1841 was 257,423, which gives 114.359 to the square mile, being 53.64 below the average per square mile for all France.

The department is almost entirely covered with the mountains of Auvergne, the principal chain of which crosses it from N.N.E. to S.W. In this chain and within a range of 7 miles diameter are the volcanic summits of Plomb-du-Cantal, Col-de-Cabre, Puy-Mary, and Puy-Violent, which rise to the respective heights of 6095, 5541, 5443, and 5229 feet above the sea. These peaks are of conical shape, bare, rugged, and from their steepness almost inaccessible. The whole range is of volcanic origin and contains many craters distinguished by the local name *Puy*. In the neighbourhood of this central region are many ancient valleys filled up with lava which has flowed at several unknown and long distant epochs. The mountains are covered with snow during several months of the year. In the spring the lower heights abound with verdant pastures, intermixed with numerous wild flowers, especially violets, hyacinths, lily-of-the-valley, pinks, daisies, &c.; they also produce medicinal plants and orchil abundantly. The only human habitations met with in this wild region are the *burons*, or little huts, which serve as temporary dwellings for the cow-herds, who drive their cattle hither in the fine season, and manufacture large quantities of butter and cheese

At the lower extremities of the high plains and in the valleys which separate them are found the towns, villages, and cultivated lands of the department. Here also the flocks and herds come to pass the winter in vast buildings, the upper story of which is used as a store for corn and other farm produce. The valleys, which radiate in all directions from the mountain-knot of the Plomb-du-Cantal, are picturesque and beautiful in the extreme, abounding in woods, meadows, waters, and bold cascades, and strewed with neat villages, which are clustered round the parish church, or sheltered by a lofty precipice or some ancient castle. The same mountain-knot is the watershed of the basin of the Allier and the Loire on the N.E., and of the Dordogne and Garonne on the W. The Rue, which receives the Sautoire, rises on the northern side of Plomb-du-Cantal, and flows N.W. into the Dordogne. The Cère rises in its south-western slopes, and, receiving the Jordanne a little below Aurillac, flows W. on its way to join the Dordogne, which forms for a few miles the boundary of the department on the N.W. The streams springing from the S. and S.E. of the central group flow into the Truyère, which rising in the mountains of Lozère, and flowing first eastward, then towards the N., enters the department of Cantal, crosses it to westward, then turns S.W., and falls into the Lot near Entraigues in the department of Aveyron. The Alagnon rises on the eastern side, receives several small streams, and flowing N.N.E. falls into the Allier. In the south-west of the department rises the Celle, which flows S.W. into the Lot. Several of these rivers flow through very deep ravines, the precipitous sides of which show the different layers of lava and other strata through which the waters have worn their way. All of them abound in cascades, have great rapidity of descent, and are consequently not navigable.

To the south and west of the great mountain-range the department has a tolerably mild climate; to the north and east, the climate is less genial; all the central and higher portion of the department has a rude climate and a long dreary winter. The department is subject to terrible hurricanes; those that occur in the winter, called *ecirs*, are especially fearful, as they sweep the snow before them, filling up the narrow valleys and burying the houses beneath the drift.

The department contains 1,440,585 acres, distributed among 58,793 proprietors, and sub-divided into 765,688 parcels. Of this surface 442,685 acres are arable, only 958 are under vines, 547,789 acres are mountain pasture, 157,765 forest and woodland, 255,834 heaths and moors. The arable portion consists generally of a very light and stony soil, and does not produce breadstuffs sufficient for the consumption. Very little wheat is grown or used; the chief crops are rye, buckwheat, barley, hemp, flax, and oleaginous plants. Chestnuts are abundant, and in some districts form the principal part of the food of the people; in other districts peas and lentils are used as food. The excellent mountain pastures form the main source of the wealth of the department. The number of horned cattle reared for exportation and for the purpose of making butter and cheese is immense. As much as 50,000 quintals of cheese is annually made. Horses are numerous; they are small in size, but hardy: mules are much used as beasts of burden. Sheep are very numerous, and in high repute for the goodness of their wool. In mineral wealth the department is rich; copper, iron, lead, sulphur, alum, antimony, coal, limestone, slate, granite, &c., are found, but the only mine worked is one of coal. The number of mineral and hot springs is very great. The manufacturing industry of the department is of little importance; it is confined to the making of lace, copper vessels, coarse stuffs, glue, and leather. At the end of autumn many of the population emigrate to Paris and other parts of France, where they find employment as porters, water-carriers, tinkers, and handicraftsmen, returning home in the spring of the following year, or in some instances after an interval of several years, for the inhabitants are strongly attached to their poor, wild, but highly picturesque country. The mountainous nature of its surface, and the want of roads, canals, and navigable rivers present great obstacles to the development of the trade of the department, which consists in the exportation of its cattle and agricultural products, and in the importation of corn, wine, oil, salt, metals, and cloth.

The department is divided into 4 arrondissements, which, with their subdivisions and population, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Aurillac . . .	8	„	97,197
Mauriac . . .	6	64	62,860
Murat	3	51	35,676
St.-Flour . . .	6	82	61,690
Total . .	23	„	257,423

In the arrondissement of Aurillac the chief town is AURILLAC. St.-Cernin, a few miles N. of Aurillac, has a population of 3046; St.-Mamet, 11 miles from Aurillac, has a fine old castle, an ancient church, and a population of 2000; Maurs, 25 miles S.S.W. from Aurillac, stands in the beautiful valley of Arcambie, which is watered by the Rance, a feeder of the Celle; it has 3000 inhabitants; Vic-sur-Cère stands at the head of the fine valley of the Cère; the population is 2000, but this number is doubled from June to October by the numbers who resort to its mineral waters.

In the arrondissement of Mauriac the chief town is Mauriac, which has a college, a tribunal of first instance, and a population of 3400. The most remarkable building is the ancient church of Notre-Dame-des-Miracles, which is adorned with some very curious bas-reliefs. The town is the chief entrepôt for the colonial produce, provisions, and merchandise required for the mountain districts, and has a considerable trade. Pléaux stands in a fertile plain, 10 miles from Mauriac, and has 3012 inhabitants. Riom-ez-Montagnes, in which several Roman remains have been found, is 19 miles from Mauriac and has 2400 inhabitants. Saignes, at the foot of a basaltic rock, crowned by an ancient castle, and Salers, situated in the mountains at the foot of the Plomb-du-Cantal, are small places which give name to the other cantons.

In the arrondissement of Murat the chief town is Murat, which is an ill-built place on the right bank of the Alagnon, with 2700 inhabitants. It has a college and tribunal of first instance. The neighbourhood of this town is most interesting to the geologist for the many evidences it presents of violent volcanic action; Allanche, a well-built town N.N.E. of Murat, with a handsome church, an old castle, and 2605 inhabitants, and Marcenat, which has a ferruginous spring and a population of 2664, are the chief places of the other cantons.

In the arrondissement of St.-Flour the chief town is St.-Flour, formerly the capital of Haute-Auvergne, which stands on a high plateau formed by a mass of basaltic rock, presenting on three sides steep precipices, and joined to the neighbouring high land of Planèse by a narrow isthmus which is handsomely laid out as a promenade. A part of the town stands at the foot of this rock, and communicates with the upper town by a winding road cut in the rock. Through this part of the town the road from Paris to Perpignan runs. The streets of St.-Flour are narrow; the houses are built of basalt and lava and covered with tiles. The chief building is the cathedral. The town is the seat of a bishop, has an ecclesiastical seminary, a college, tribunals of first instance and of commerce, and a population of 5930. The assize court of the department is held here. Chaudes-Aigues, 15 miles from St.-Flour, famous for its hot mineral springs, is situated in a gorge of the mountains, and has a population of 2476. The waters vary in heat at the different springs from 135° to 177° Fahrenheit; in the winter they are conveyed by pipes through the houses of the town for the purpose of heating. The road from St.-

Flour to this place traverses the plateau of Planèse, affording a fine view of the volcanic group of Cantal; on approaching Chaudes-Aigues, it is terraced through the granite rock along frightful ravines in the bottom of which the Truyère flows. Massiac, in a narrow valley watered by the Alagnon, has 2200 inhabitants.

The department forms the see of the Bishop of St.-Flour; it returns 4 members to the Chamber of Deputies, resorts to the Cour Royale of Riom and the University Academy of Clermont, and belongs to the 19th Military Division, the head quarters of which are Clermont.

(*Dictionnaire de la France*; Balbi, *Géographie*; Macgregor's *Statistics*.)

CANTARI'NI, SIMO'NE, called *Il Pesarese*, was born at Pesaro, in 1612, and in his youth was the scholar of Pandolfi; but he afterwards chose Guido Reni for his master, and lived some time with him in Bologna. He removed to Rome, and obtained a high reputation there. After spending some time in Rome, he returned to Bologna, and opened a school there, which however he gave up shortly afterwards, upon receiving an invitation from the Duke of Mantua to visit that city. From Mantua he went to Verona, where he died in 1648, aged only 36, under the suspicion of having been poisoned.

Cantarini was certainly a great painter, as far as execution could make him such. In the extremities he was perhaps perfect, and has had few rivals. His masterpieces are, Sant' Antonio at the Franciscans at Cagli; San Jacopo, in the church of that saint at Rimini; a Magdalen at the Philippines; a San Domenico at the Predicants, and several others. He etched also several plates in a masterly manner, some of which are sold as the works of Guido.

(Malvasia, *Felsina Pittrice*; Lanzi, *Storia Pittorica*, &c.; Bartsch, *Peintre-Graveur*.)

CANTA'TA, in Music, originally signified a short lyric drama, consisting of recitative, airs, duets, and occasionally choruses. Subsequently it assumed a more contracted form, and was written for a single voice. Scarlatti, Handel, Porpora, Marcello, Pergolesi, Purcell, Pepusch, and Arne, were the chief composers of cantatas.

CANTEEN, a small wooden vessel capable of containing three pints, which is carried by each soldier on the march on foreign service or in the field. The use of them has been some time general in the British army.

Another kind of canteen is a square box fitted up with compartments, in which officers on foreign service pack a variety of articles.

A canteen is also a place in barracks where a licensed sutler is allowed to sell provisions, liquors, coffee, &c. to non-commissioned officers and privates.

CANTELU. [Seine-Inpe'rieurb.]

CANTEMIR, DEMETRIUS, was born in 1673 of a family originally from Little Tartary. His father was governor of Moldavia, and Demetrius obtained of the Porte the same office in 1710. He afterwards revolted from the Porte, and was driven from Moldavia; but Peter the Great gave him in compensation lands in the Ukraine, and created him a prince of the Russian empire. Cantemir died on his estate in the Ukraine in 1723. He left several works, of which the principal are: 'History of the Origin and of the Decay of the Ottoman Empire,' written originally in Latin, and translated both into French and English; 'History of Moldavia, Ancient and Modern,' in the Moldavian language. Cantemir was acquainted with many languages.

CANTERBURY, a city, municipal borough, parliamentary borough, and the metropolitan see of England and Wales, stands on the River Stour, in the county of Kent, in 51° 17′ N. lat., 1° 4′ E. long., 56 miles E. by S. from London by the road, and 81 by the South-Eastern Railway. At the time of the Roman occupation it was of considerable importance. By the Romans it was called Durovernum, by the Saxons Caer-Cant, or the city of Kent, whence Cantuaria, and Canterbury. At the beginning of the Saxon Heptarchy it was the chief city of the kingdom of Kent, and was the king's residence. Many Roman coins and other Roman antiquities have been discovered in the city and neighbourhood.

Canterbury, in early times, suffered repeated ravages, particularly from the Danes. At Canterbury was founded the first regular Christian establishment of Augustine, who, in the year 597, baptized Ethelbert, king of Kent. Augustine was the first archbishop, and died here in the year 604. Among the most celebrated of the archbishops was Thomas à Becket, who was murdered before the altar by four of the attendants of King Henry II. in 1171. [Becket, Thomas.]

Canterbury is pleasantly situated in a fertile valley, surrounded by hills of moderate elevation. The river at Canterbury flows in separate channels, which are partly covered with houses and partly open. The city was formerly surrounded by a wall surmounted by twenty-one turrets, and had six principal gates. Much of the wall yet remains. The chief public buildings are—the cathedral, 14 parish churches and several places of public worship for dissenters; the guild-hall, erected in 1439, and rebuilt in 1688; the sessions-house; the county-gaol; the city-gaol; the corn and hop exchange, erected in 1824; the museum, which besides a collection of curiosities has a considerable library; the workhouse; the savings' bank; the assembly-rooms; the Kent and Canterbury Hospital; the Canterbury Dispensary, established in 1836; and the markets. In the King's Free Grammar School, 50 boys are educated, by an upper master and under master, under the superintendence of the dean and chapter. There is also a blue-coat school, a gray-coat school, a British school, and several others.

The most interesting building in Canterbury is the cathedral, which, having been nearly destroyed by fire in 1174, was rebuilt, and by successive archbishops enlarged and ornamented till it became the present magnificent structure, which exhibits specimens of every style of architecture, from the earliest Norman to the latest English. The form is a double cross with a beautiful tower, 235 feet high, rising from the intersection of the nave and western transept, and two massive Nor-

man towers at the west end, one of which has been rebuilt within these few years. The entire length, from east to west, is 514 feet within the walls; length of the choir, 180 feet; length of the eastern transept 154 feet, of the western 124 feet; width, including the aisles, 71 feet; height of the vaulted roof, 80 feet. Among the numerous chapels which decorate the interior is that of the Holy Trinity, in which was the rich shrine of Thomas à Becket. There are many beautiful monuments. The ruins of St. Augustine's Monastery are in the eastern suburbs; this abbey and its precincts occupied sixteen acres of ground, which were inclosed by a wall. The fine gateway of St. Augustine, which formed the chief entrance, was in a dilapidated state, but was repaired some years ago by public subscription. The ruins of the archiepiscopal palace, which was originally built by Archbishop Lanfranc, adjoin the borough of Staplegate, a suburb of the city. The remains of the castle consist now of little more than the walls of the keep, of great thickness, but reduced to half their former height.

The trade of Canterbury depends chiefly on the cultivation of hops, the plantations of which cover many hundreds of acres in the neighbourhood of the city.

The municipal borough of Canterbury is divided into 3 wards, and is governed by a mayor, 6 aldermen, and 18 councillors. The population in 1841 was 15,435. The population of the parliamentary borough, which returns two members to the House of Commons, was 15,422.

(*Canterbury Guide; Population Returns.*)

CANTERBURY BELLS. [CAMPANULA.]

CANTHARIDÆ, a family of coleopterous insects of the section *Trachelides*. To this family belongs the genus *Cantharis*, of which the well-known *Spanish Fly*, or Blister Beetle (*Cantharis vesicatoria*), is an example. This beetle is about three quarters of an inch in length, and of a bright green colour: the legs and antennæ are blueish black. This species is found in France, but is more abundant in Spain and Italy. It rarely occurs in England. When touched, the insects of this family feign death, and emit an odour of a highly penetrating nature. Their larvæ live in the ground, and feed upon the roots of plants.

CANTHARIDIN. [CANTHARIS OFFICINALIS.]

CANTHARIS OFFICINALIS (Geoffroy)—*Meloe vesicatorius* (Linnæus), *Lytta vesicatoria* (Fabr.)—is extensively employed to produce blisters. The volatile principle which is exhaled by the living insect is so pungent as to cause great inconvenience to those who approach the trees where they alight. They are generally collected during the morning or evening, when somewhat torpid, by persons, whose face and hands are protected by coverings, shaking or beating with poles the trees on which the insects are seated. The most common method of killing them is to expose them to the vapour of hot vinegar: they are then dried on hurdles, and put up for use. Turpentine is said to protect them from the attacks of certain small insects which prey upon particular parts of the dead insects. Though bearing the name of Spanish Blistering Flies, the greatest quantity is obtained from St. Petersburg; and the Russian insects are superior to those from Sicily or France. When good, they are of a shining yellowish green colour: the odour is strong, virose, disagreeable, resembling that of mice; taste acrid, caustic, urinous. By drying they lose a great portion of their weight; but age does not greatly lessen their active properties if preserved from damp.

The active principle of these insects is a white substance, which may be obtained in the form of small crystalline plates. To this principle the name of *cantharidin* has been given. Cantharidin may be extracted in various ways; but where it is desired for practical purposes to employ cantharidin apart from the other constituents of the fly, turpentine, at the temperature of 212° of Fahr., allowed to stand upon a number of the powdered flies, especially the large female flies, will extract it; and the terebinthinate solution may be used as a most efficacious vesicant. Cantharidin is so powerful, that one-hundredth part of a grain applied to the skin will excite vesication. Its chemical composition is, 10 equivalents of carbon, 6 of hydrogen, and 4 of oxygen.

Cantharides are employed both externally and internally. Applied to the skin, in moderate quantity, the only effect is rubefaction of the part, followed in general by vesicles or blisters, and the secondary effects of counter-irritants on the system at large. Should any of it be absorbed, a specific effect will be exerted on the urino-genital organs, precisely as if administered by the mouth. If a very large quantity be absorbed or introduced into the system by the mouth or any other channel, such as injection by a vein, a powerful and often dangerous degree of action is exerted on the cerebro-spinal system, giving rise to violent nervous symptoms. The quantity which acts as a poisonous dose varies greatly in different individuals. This difference of degree of action is referrible to idiosyncrasy; and while one individual has been sensibly affected by merely smelling the powder, six ounces of the tincture have been taken by another without injury. It is a medicine which requires the utmost circumspection in its administration. Externally, cantharides may be employed in various forms for different purposes, to act as a local stimulant, to cause rubefaction, to produce vesicles and a discharge of fluid, or simply for their secondary effects, which may be either stimulant or sedative according to circumstances.

CANTHARUS, a genus of acanthopterygious osseous fishes established by Cuvier for the reception of certain species belonging to the family of *Sparidæ*. The fishes of this genus inhabit the Mediterranean and Atlantic. Cuvier, in the 'Règne Animal,' vol. ii. p. 185, enumerates two species belonging to the seas of Europe, viz. *Sparus cantharus*, Linn. and *Sparus brama*, Linn. Mr. Yarrell enumerates only one species belonging to the restricted genus *Cantharus* as British, the Black Bream (*Cantharus griseus*, Cuv. et Valenc.). Several exotic species inhabit the seas along the coasts of Africa and India (Cuvier, *Règne Anim.*; Cuv. et Valenc; *Hist. Nat. des Poissons*, vol. vi.; Yarrell's *British Fishes*, vol. i.)

CANTICLES. [SOLOMON, SONG OF.]

CANTILEVER, or bracket, a projecting piece of wood, stone, or iron, which supports a cornice, balcony, &c.

CANTIRE. [ARGYLESHIRE.]

CANTO-FERMO. [PLAIN-SONG.]

CANTON, a city of China, capital of the province of Kuâng-tong, of which Canton is a corruption. The real name is Kuâng-chow-foo. The city is situated on the eastern bank of the Chookeang, in 23° 7′ N. lat., 113° 14′ E. long. The distance from the entrance of the river, which is called Bocca Tigris, is 32 miles. Ships ascend the river only as far as Whampoa, which is 10 miles below the foreign factories, and there they take in and discharge their cargoes by means of native boats. The country to the north and east of the city is hilly and mountainous; to the south it is an alluvial flat, being the delta formed by the deposits from the main river. Smaller rivers and creeks are numerous, abound with fish, and are covered with boats.

Canton is inclosed by a thick wall, of a square form, which on the south runs parallel to the river at the distance of about 100 yards, and on the north, where the city is built partly up the acclivities of the hills, takes an irregular course, and in some places is about 300 feet above the surface of the river. The entire circuit of the wall is about seven miles. An interior wall, which runs from east to west, divides the city into two parts, of which the northern and largest part is called the Old City, and the southern part the New City. The walls are of brick, on a foundation of red sandstone, and vary in height from 20 to 30 feet. The exterior wall has twelve gates, and the interior wall has four gates which form the communications between the New City and the Old City. Most of the streets are short, and irregularly laid out, varying in width from 6 to 16 feet; but in general they are about 8 feet wide, just allowing of the passage of two sedan chairs, for no wheel carriages are used at Canton. They are every where flagged, more or less regularly, with large flat stones. The crowd that throngs them is exceedingly great. Bricks are generally used for the walls of houses, though a few of the poorer sort are constructed of mud. Stone and wood are sparingly used in building: stone is employed about gateways, and wood for columns, beams, and rafters. The roofing consists invariably of thin tiles, which are laid on the rafters in rows alternately concave and convex, the latter overlapping the joined edges of the former and cemented over them with mortar. Windows are small and rarely supplied with glass. Paper, mica, and other semi-transparent substances are used in its place. The materials for building are procurable at moderate prices and in abundance. The wood, a variety of fir, is floated down the river in huge rafts, and bricks are made in the neighbourhood of Canton.

The habitations in which about one-half of the population of Canton have their abodes, stand close on the street, and have usually only a single entrance, which is closed by a bamboo screen suspended from the top of the door. Chinese houses of consequence open towards the south, but in the poorer sort this point of course is often disregarded. The dwellings inhabited by the more wealthy part of the community are surrounded by a wall 12 or 14 feet high, which fronts the street, and completely screens the buildings within. The poorest persons live in the extreme parts of the suburbs, along the banks of the river and its creeks, and in the northern part of the old city: their houses are mere mud hovels, low, narrow, dark, and without any division of apartments.

The shops are commonly quite open towards the street, that is, those appropriated to Chinese customers; for the few streets devoted to European trade are rather on a different plan, the shops being of a closer structure, and less exposed to external observation. The several streets are commonly devoted to distinct trades. By the side of each shop is suspended from on high a huge ornamental tablet of wood, varnished and gilded, on which are inscribed the particular calling of the tenant and the goods in which he deals. Some of the shops, which are pretty richly supplied, are much exposed towards the street; but the inhabitants of each division generally combine into a system of watch and ward for common protection, and during the night the streets are closed at each end by doors, which are guarded by the regular police. The greatest risk to which the houses and shops of Canton are exposed is that of fires, which are frequent, the notion of fatalism, which prevails among the natives, rendering them singularly careless. The Chinese have very generally adopted the use of our engines, which they themselves manufacture sufficiently well to answer the purpose. Vagabonds and beggars are very numerous in Canton. The amount of the native population of Canton has been often estimated; but so little authentic information has ever been obtained on the subject, that it still remains undecided. The sweeping calculation by which some have endeavoured to make it amount to a million deserves no credit.

No inconsiderable part of the population lives upon the river, in the junks, barges, and small boats. The space opposite to Canton and its suburbs resembles a floating city. By far the largest part consists of boats which are generally not more than 10 or 12 feet long, about 6 broad, and so low that a person can scarcely stand up in them. Their covering consists of a bamboo or mat tilt, shaped like that of a waggon, which is very light, and serves tolerably as a defence against the weather. Whole families live in these boats, and are considered as a distinct part of the population, being under a separate regulation, and not allowed to intermarry with those on shore.

The portion of Canton in which the European factories are situated, being a mere suburb, does not contain many of the larger or public buildings; but the arrangement and architecture of the streets and shops are precisely the same as within the walls of the city. The whole frontage of the buildings in which foreigners of all nations are shut up together for the prosecution of their trading business at Canton does not exceed between seven and eight hundred feet. Each front,

of which there are about thirteen, extends backwards a hundred and thirty yards into a long narrow lane, on each side of which, as well as over arches that cross it, are the confined abodes of the English, French, Dutch, Americans, Parsees, and others.

The European factories are called by the Chinese *Hongs*, this word hong being always used by them to denote a commercial establishment or warehouse. To the east of all there is a narrow inlet from the river—a sort of ditch, which serves to surround a portion of the city wall, as well as to drain that portion of the town. This is crossed with a single arch by a narrow street at the back of the factories, that leads to the warehouses of the several Hong merchants, all of them communicating with the river by wooden stairs, from which the tea and other goods are shipped. The shops, instead of being set out with the showy and sometimes expensive front of an English or French shop, are closed in by gloomy black shutters, and very ill lit by a small skylight, or rather a hole in the roof. The alley called Hog Lane is more narrow and filthy than any thing of the kind in a European town. The hovels by which it is lined are occupied by abandoned Chinese, who supply the sailors with spirits, medicated to their taste with stimulating or stupifying drugs.

The climate at Canton is generally remarkably healthy, though extremely hot during the summer, and at all times subject to great and sudden vicissitudes. In July and August the thermometer sometimes reaches 100° Fahr. in the shade, and during winter it occasionally falls below the freezing point at night: the average of the year is about 72°.

Canton is one of the five ports of China, at which, according to the treaty with the Chinese of Aug. 29, 1842, British subjects are permitted to trade. The principal stipulations in that treaty have since been very fully carried into effect, under a series of general regulations dated at Government House, Victoria, Hong Kong, July 22, 1843.

By far the largest article of export from Canton is tea. The other chief exports consist of silver, silks, and china-ware. The imports consist of woollen goods, cotton, cotton-yarn, long cloths, and various other articles of British manufacture. A contraband trade in opium is still, we believe, carried on in the Canton River, notwithstanding the prohibition of the Chinese government, and though the governor of Hong Kong, early in 1845, made the trade in opium legal on that island, under certain regulations.

The siege of Canton by the British in 1841, together with other events of the Chinese war, is noticed under CHINA.

(Davis's *Chinese*; M'Culloch's *Commercial Dictionary*.)

CANTON, JOHN, was born at Stroud, July 31, 1718. Some progress made by him in mathematics and experimental philosophy induced his father to send him to London in 1737. He then articled himself for five years to the master of a school, with whom he afterwards went into partnership, and in this profession he spent his life.

His attention was chiefly directed to electricity, in which science he made several valuable discoveries. He was admitted a Fellow of the Royal Society in 1749, to whose 'Transactions' he contributed several papers; and in 1751 he received the gold medal for his method of making artificial magnets. He was the first who, in England, verified Franklin's idea of the similarity of lightning and the electric fluid (1752), and of the clouds being in opposite states of electricity (1753). The common pith-ball electrometer, and the amalgam of tin and mercury used for increasing the action of the rubber of an electrical machine, are due to him. In 1762 he proved the compressibility of water, in opposition to the well-known Florentine experiment, for which proof a second gold medal was awarded to him by the Royal Society in 1765. In 1769 he communicated experiments, showing that the luminous appearance of the sea arises from the presence of decomposed animal matter. He died March 22, 1772.

CANTONI, SIMONE, a recent Milanese architect of considerable note, was born at Maggio, a small village in the north of Italy, and received his first instruction in architecture from his father Pietro, who was of that profession, and was chiefly employed at Genoa. He afterwards went to Rome for further improvement, and on his return settled at Milan, where he was employed upon the Palazzo Mellerio, and afterwards erected in the same city the Casa Perticati and the Palazzo Serbelloni, the Seminary and Lyceum at Como, the Villa Raimondi near the same town, the Palazzo Vailetti at Bergamo, and the church at Gorgonzola, between Bergamo and Milan. On the destruction of the Great Council Hall in the Ducal Palace at Genoa, by fire, in November 1777, Cantoni was employed to rebuild it, which he did with equal ability and taste. He died March 3, 1818.

CANTONMENTS are the dwelling-places occupied by an army during any suspension of active operations in the field: the term, though frequently applied to winter-quarters, particularly designates the more temporary shelter which an army may occasionally take, and in which they hold themselves in readiness to take the field at a moment's warning. [TACTICS.]

CANUTE. Much of the history of the Anglo-Saxon kings is the history of their contests with the formidable Northmen, the inhabitants of Sweden, Norway, and Denmark. After a long-continued contest, the Danes became settled in many portions of England, tribute was paid to them, and finally, in the person of Canute, they effected a conquest over the Anglo-Saxon people, and the extinction for a time of the Anglo-Saxon sovereignty. Canute reigned about twenty years (A.D. 1017—A.D. 1036), during which period the country was at peace. He died at Shaftesbury, and was interred at Winchester, the usual place of interment of the Saxon kings. William of Malmesbury says of him, that by his piety, justice, and moderation, he gained the affection of his subjects, and a universal esteem among foreigners. The

beautiful little story of the rebuke which he gave to the flattery of his courtiers is well known, and is related in some of our oldest and best chroniclers.

The reigns of the two sons of Canute were short and disturbed, and in 1041 the posterity of Egbert, in the person of Edward the Confessor, son of King Ethelred, regained the throne.

CAN'ZONET, in Music, a song, short in comparison with the *Aria*. Formerly the term was applied to vocal music in parts, but is now confined to songs for a single voice.

CAOUTCHOUC. This remarkable substance is produced by the *Siphonia elastica*, the *Ficus elastica*, the *Urceola elastica*, and many other American and Asiatic plants. It is often termed *India rubber*, from its use in removing pencil traces from paper. It was in the year 1735 that this substance was first discovered by De La Condamine to be the inspissated juice of a tree. In a pure state, it is insipid and scentless, white, extremely elastic, inflammable, not altered by exposure to the air, insoluble in water and in alcohol, soluble in æther and in the essential oils, acted upon by alkalies, and decomposed by concentrated sulphuric and nitric acids.

In order to obtain caoutchouc, the trees which produce it are pierced in the rainy season, upon which a thick juice of a yellowish white colour exudes, which becomes darker by exposure to the air. If this juice be kept in well-corked bottles, it may be preserved for some time without undergoing much change, and it has been imported in this state; but, however perfectly the atmosphere may be excluded, it will ultimately solidify. Heat congulates the juice and separates the caoutchouc: alcohol and acids produce the same effect. If exposed to the air in thin films, it soon dries, losing from one-third to one-half of its weight, and leaving caoutchouc of the usual appearance. By the natives of South America it is applied in successive coats to the surface of clay models of bottles and of animals, and dried over fires, the smoke of which communicates to it a dark colour. While the caoutchouc is still soft, various lines are drawn upon it with a blunt tool, which remain permanently impressed. When the whole has become dry, the clay is crushed and shaken out of the bottles.

There are various chemical properties which render caoutchouc valuable in the arts; but *elasticity* and *imperviousness to water* are the properties for which it is most prized. In the shape of fine threads, this substance is combined with linen, cotton, and wool in a great variety of ways, for forming elastic braces, springs, straps, garters, bandages, &c. It is worked into the tops of gloves, as a mode of fastening, and is used in many ways in articles of dress. Some attempts have been made to employ caoutchouc to form a flexible and yielding pavement for stables, lobbies, and halls. Buffers for railway carriages, and numerous articles in which elasticity is required, now contain caoutchouc in their formation.

With regard to imperviousness, the natives of South America have long been in the habit of making water-proof leggings of caoutchouc. In England, cloth is made water-proof by being coated with caoutchouc liquefied in the oil distilled from gas tar, two such coated surfaces being placed in contact so as to produce a double kind of cloth. Such cloth is not only waterproof, but air-proof, and is used for cloaks, capes, air-beds and cushions, life-preservers, &c.

The quantity of caoutchouc imported in the year ending Jan. 5, 1847, was 5,029 cwts.

CAPACITY, the same in sense as CONTENT or volume, in pure mathematics. In physics, it generally signifies power of holding or retaining. Thus we speak of the capacity of a body for heat, &c.

CAPE, literally Head, is a term used to indicate the extremity of a portion of the coast which projects beyond the general line of the shore.

CAPE BRETON, an island situated N.E. of Nova Scotia, and forming the south-eastern limit of the Gulf of St. Laurence. It is separated from Nova Scotia by a strait about a mile wide and 20 miles long, called the Gut of Canso, which is remarkable for the irregularity of its tides. At the eastern extremity of the Gut is Lennox Channel, and at the western St. George's Bay. The island is almost cut in two by an inlet of the sea on the N.E. called Bras d'Or, which is separated from St. Peter's Bay, in Lennox Channel, by an isthmus only 900 yards across. The entrance to the Bras d'Or is by two channels formed by the island of Boulardrie, which lies between St. Ann's and Sidney harbours. The northern channel, called the Great Entrance, alone is practicable. Along the coasts of this inland sea are many fine harbours, and every where the depth of water is great. The only harbour on the west coast is Port Hood, at the N.W. extremity of St. George's Bay. The greatest length of the island from N. to S. is about 100 miles, and its greatest breadth 85. The area, exclusive of the Bras d'Or, is about 2,000,000 acres, about one-half of which is fit for cultivation. The land, especially in the north, stands pretty high; Cape Enfumé, on the N.E. coast, is 1800 feet above the sea. There are several large fresh-water lakes; Lake Marguerite and Lake Ainslie in the north-west peninsula; in the eastern peninsula, Grand Lake, and Miré Lake which terminates in Miré Bay. The rivers are numerous, but their course is short and none of them are navigable. The climate is not so rigorous nor so regular as that of the continent of America. Frost sets in about the middle of December, and breaks up in the end of April, but during this time there are frequent intervals of milder weather. The spring is short and vegetation exceedingly rapid. Crops are put down in May, fruits ripen in July, and the harvest is gathered in August. The population of the island is about 28,000, who are chiefly engaged in agriculture, the timber trade, the very profitable fisheries along the coast, in mining coal, of which there are extensive fields in the island, and in ship-building. The farm produce includes the common cereal grains, maize, and potatoes. The timber-trees are pine, birch, oak, spruce, beech, ash, maple, and elm. Granite, limestone, mica, and clay slate, plaster of Paris, and iron ore are found. There are several salt springs on the coasts of the Bras d'Or.

The island was first colonised in 1712 by the French, who called it *Isle Royale*, and built the fortifications of Louisbourg on the south-east coast, a little south of the Cape Breton. In 1758 the English took the island and demolished the fortifications of Louisbourg, which settlement has been since deserted. Sidney, a few miles from Sidney Harbour, on the north-east coast, is the seat of government, and has only about 500 inhabitants. The other settlements are chiefly along the coasts of the Bras d'Or, which affords great facilities for the ready export of all kinds of produce. The island of Cape Breton forms a county, and is included in the government of Nova Scotia. To the north of Cape Breton is the little island of St. Paul, on which there is a lighthouse; to the north-west is the Magdalen group, consisting of Amherst, Wolfe, Coffin, Saunder, Entry, and Deadman islands; and to the south Aylesbury island and Isle Madame. On this last is the town of Arichat, which has 2000 inhabitants.

(Macgregor's *British America;* Bouchette's *British Dominions in North America.*)

CAPE COD. [Massachusetts.]

CAPE FEAR. [Carolina, North.]

CAPE OF GOOD HOPE, one of the most southern points of Africa, was discovered by Bartholomew Diaz, the Portuguese navigator, in 1493. Vasco de Gama doubled it in 1497, on his way to the Indian seas. This cape, in 18° 23′ E. long., 34° 22′ S. lat., is the south extremity of a narrow peninsula about 30 miles long, formed by False Bay on the E., Table Bay on the N., and the Atlantic on the W. Cape Town is on Table Bay on the north coast of this peninsula, and Simon's Town is on False Bay. About the middle of the 17th century, the Dutch colonised this peninsula, and gradually extended their dominion northward through the Hottentot country, to about 32° S. lat., where the boundary was formed by the Nieuwveld Bergen and Sneeuwbergen ranges. The present colony extends farther northward to the confines of the Bosjesmans, the Griquas, and the Koranna Hottentot countries. To the N.W. the colony borders on a belt of terraces and lowlands between the mountains and the sea, comprising the Namaqualand, and watered by the Oliphant, the Fish, and the Orange Rivers. The colony extends from 17° 10′ to 27° 30′ E. long.; and to the north as far as 29° 40′ S. lat. The coast line on the south and west measures upwards of 1900 miles.

The whole colony is a land of terraces, rising one above the other from the coast, divided by almost parallel ridges, and intersected by numerous ravines or beds of torrents, which contain little or no water during the summer months. The want of perennial springs, and the consequent dryness of the soil and scarcity of water for cattle, constitute the principal deficiencies of the colony. The rivers are too shallow or their current too rapid for the purposes of navigation. Nearly two-thirds of the land is destitute of vegetation during the greater part of the year. The settlement of Beaufort is in the uppermost of these terraces, called the Great Karroo. Eastward of this, at the foot of the Sneeuwbergen, or Snow Mountains, is the settlement of Graaf Reynet, a well-built and flourishing town, which owes its prosperity to a Dutch settler, Captain Stockenstrom. Still farther east is the district of Somerset, on the Great Fish River: this district, being next adjoining the Caffre country, is much exposed to depredations and predatory warfare. Between Somerset and Algoa Bay is Albany, with its chief town, Graham Town. [Albany.] Graham Town has wide streets, handsome houses, capacious stores, several churches and other public buildings, and a population of keen and prosperous traders. Bathurst is a settlement near the mouth of the Kowie River. Port Elizabeth, in Algoa Bay, is the chief port of shipment in the eastern part of the colony. This town contained in 1845 about 4000 inhabitants, almost wholly engaged in mercantile enterprise; the town itself is not equal to Graham Town. Near the Gauritz River forests of fine timber trees abound. West of this river is the corn-growing district of Zwellendam. Bordering this on the west is Stellenbosch, the chief wine district. With the exception of the last two districts, and Cape Town district, nearly the whole colony is of a grazing character.

The wild animals of the colony are—the lion, leopard, hyæna, rhinoceros, the wolf, and jackal. They however, as well as the elephant, have much decreased in number, having retreated before the advancing steps of civilised man. In the more secluded parts of the interior spring-bocks are numerous, as well as ostriches; quaggas and giraffes are also found. The black eagle of the Cape and the large vulture or condor are seen in the mountains.

The colony comprises two divisions, the eastern and the western. There are 14 districts, viz. Cape Town, Cape Division, Stellenbosch, Worcester, Clanwilliam, Zwellendam, George, Beaufort, Uitenhage, Albany, Somerset, Cradock, Graaf-Reynet, and Colesberg. The population in 1842 consisted of—

Whites (Males) . . .	44,328
,, (Females) . . .	43,113
Coloured (Males) . . .	37,697
,, (Females) . .	34,313
	159,451

In 1842 there were colonial grants to the amount of 6021*l.* devoted to the purposes of education in the African college, the school establishment, the missionary schools, and other schools, which were attended by about 2700 children. Besides the public schools, 40 in number, there were 102 private schools. In the same year, grants to the amount of 10,481*l.* 8*s.* 5*d.* were made for religious purposes, distributed thus:—Church of England 2863*l.* 8*s.* 5*d.*, Church of Scotland 300*l.*, Church of Rome 300*l.*, Dutch Church 6943*l.*, Wesleyan 75*l.* Cape Town was in 1847 constituted a bishopric.

In reply to inquiries sent out by the Colonial Office in 1845, Sir P. Maitland, then governor of Cape Colony, stated that a small amount of government assistance is rendered at that colony to orphans, old and infirm persons, sick poor, and lunatics; a sum of about 4000*l.* per annum is thus expended; but a much larger sum is contributed

from private sources. No such system as a general Poor Law has been yet found necessary in the colony.

The following are a few details relating to the commerce of this colony in recent years. The British produce and manufactures exported thither in 1845 included—apparel, 115,599*l.*; beer and ale, 10,657*l.*; coals, 6296 tons; cotton manufactures, 174,526*l.*; earthenware, 8673*l.*; glass, 9143*l.*; iron, steel, and hardware, 52,000*l.*; leather, wrought and unwrought, 40,000*l.*; linen manufactures, 21,428*l.*; silk manufactures, 9812; soap and candles, 11,857*l.*; woollen manufactures, 150,000*l.* These, and other articles of smaller value, amounted in the year to 648,749*l.* Among the articles of foreign and colonial produce sent from Great Britain to the Cape of Good Hope in 1845 were the following:—spirits, 123,000 gallons; tea, 21,000 lbs.; tobacco, 64,000 lbs.; wines, 33,000 gallons. The principal articles exported from the colony to Great Britain in 1845 were—coffee, 104,000 lbs.; gum arabic, 7432 cwts.; untanned hides, 27,032 cwts.; pepper, 187,844 lbs.; sarsaparilla, 13,010 lbs.; undressed goat-skins 140,000; tallow, 2029 cwts.; cape wine, 446,408 gallons; sheep and alpaca wool, 3,512,924 lbs. The exports of British produce and manufactures to Cape Colony in five years were of the following amount:—

1841	£384,574
1842	369,076
1843	502,577
1844	424,151
1845	648,749

In the year 1844, in addition to imports into the colony from the mother-country to the value of 424,151*l.*, there were imports from other countries sufficient to raise the amount to 650,369*l.* In the same year (1844), the total exports from Cape Colony amounted to 350,735*l.*; of which 246,217*l.* were exported to the mother-country.

The number of vessels which belonged to the Cape of Good Hope in 1845 was 35, with 3713 tonnage, and 307 men. The ports to and from which the vessels sail are Cape Town, Simon's Town, and Port Elizabeth. Simon's Town is yet only of trifling importance. Port Elizabeth is becoming a very busy spot. In 1842 the ships which entered the three ports with cargoes amounted to 604, with 166,620 tonnage; those which left the ports were 575, with 159,336 tonnage.

In 1842 the cape boats employed in the whale and seal fisheries were 144 in number; the capture consisted of 8 whales and 348 seals. In the same year, about 108,000 acres of land were occupied by grain crops; and about 30,000 with various garden crops; but all these together bore but a small ratio to the number of acres in pasture. The produce of that same year included the following items:—corn, 1,200,000 bushels; oat hay, 9,000,000 lbs.; various garden produce, 80,000, bushels; wine, 2,800,000 gallons. The live stock comprised—horses, 75,000; cattle, 452,000; sheep, 3,700,000; goats, 814,000. There were 83 corn mills in Stellenbosch, 123 in Zwellendam, 108 in Colesberg. Cape Town contained 86 manufactories of various kinds.

In 1841 Sir C. Napier, then governor of the Cape, transmitted to the home government certain resolutions passed by the inhabitants of Cape Town, in which they prayed that the government of the colony might be 'assimilated in principle and form to that of Great Britain, and that it may be composed of a governor appointed by the crown, an executive council also appointed by the crown, and a legislative assembly composed of representatives freely elected by the people.' Lord Stanley in April 1842 sent a reply unfavourable to the views of the colonists. Sir P. Maitland was appointed governor in 1844, Sir H. Pottinger in 1846, and Sir H. Smith in 1847.

(Lichtenstein; Thompson; Campbell; *Parliamentary Papers.*)

CAPE HORN is the most southern point of a small island which belongs to the extensive group of *Tierra del Fuego*. It is situated about 56° S. lat. and 67° 10′ W. long., and consists of a high precipitous black rock, utterly destitute of vegetation, and running far out into the sea. The strong west gales which blow from October to April in the neighbourhood of this Cape render it difficult to be doubled from the east. [AMERICA.]

CAPE TOWN, the capital of the colony of the Cape of Good Hope, is in 33° 55′ S. lat., and 18° 21′ E. long., at the foot of Table Mountain, on the shore of Table Bay, from which the ground rises with a gentle slope towards the mountain.

Cape Town was founded by the Dutch in 1650, and, together with the colony, continued in their possession until 1795, when it was taken by the English. At the peace of Amiens it was restored to the Dutch, but was again taken by the English in 1806, and has since remained in their possession. The town is well and regularly built. The houses, which are for the most part of a good size, are nearly all of red brick or stone, in almost all cases whitewashed, and furnished with a verandah in front. The principal streets are wide and clean, and regularly laid out, intersecting each other at right angles, and shaded with oaks and elms. Bullock caravans arrive at daybreak every morning, bringing the farm produce from the interior.

The castle is on the right-hand side of the town looking towards Table Bay, the anchorage in which it commands. The fortress is of considerable strength. Many of the public offices of the colony are within its walls, which likewise contain barracks capable of holding 1000 men. Table Bay is sufficiently capacious to contain a great number of ships, but it is exposed to a heavy swell during the prevalence of the westerly winds in June, July, and August.

Cape Town contains places of worship for Episcopalians, Roman Catholics, Presbyterians, Wesleyans, and Dutch Calvinists. The principal courts of law and government-offices for the whole colony are in Cape Town. An observatory has been established there.

CAPE VERDS, a group of 8 islands and several barren islets, lying about 400 miles from the promontory of Cape Verd, on the west coast of Africa. They extend between 14° 17′ and 17°

19′ N. lat., 22° 40′ and 25° 25′ W. long. The coasts are low, but the central parts of the islands rise to a considerable height. They are all of volcanic origin; in Fogo there is still an active volcano. The climate is varied by droughts and extreme heat from November to July, and with rain, fogs, and thunder-storms during the rest of the year. Sometimes there is no rain for two or three years. The soil is generally dry, and in many parts rocky and barren. Maize and rice, the chief food of the people, oranges, melons, pomegranates, bananas, lemons, figs, guavas, are the chief products. The fruits are of the best quality. Sweet potatoes are grown; the sugar-cane and the vine are cultivated, but it is prohibited to make wine. The palm, tamarind, and adansonia are the principal trees. The domestic animals are asses, goats, and poultry; among the wild animals are monkeys and bisam-cats; turtles are abundant in the neighbouring seas. Salt is made from sea-water by solar evaporation, and is an important article of export to America and the coast of Africa. Orchilla is gathered for the government. Besides salt and the products above named, the principal exports are goat-skins and asses to the West Indies. The following table shows the area and population of the islands:—

	Area in sq. miles.	Free inhab.	Slaves.
Santiago. .	360	19,932	1714
Fogo . .	144	4,706	909
Brava . .	36	3,820	170
Maio . .	50	1542	363
Boavista. .	140	2,818	513
S. Nicolao .	115	5,293	125
S. Antonio .	240	13,407	180
S. Vicente .	70	336	5
Total . .	1155	51,854	3979

Branco, Santa Luzia, Raza are bare, rocky, and uninhabited; Sal, though barren, is important for the quantity of salt collected along the lagunes on the coast. Ribeira Grande, on the island of Santiago, is the capital of the islands and the seat of a bishop and of the Portuguese governor. Porto Praya, on the south coast of the same island, is the principal harbour; it is visited by vessels bound for India.

The islands were discovered in 1449 by the Portuguese, by whom they were soon after settled, and to whom they still belong. The inhabitants are mostly negroes, mixed with some mulattoes, descended from the Portuguese settlers. They are all Roman Catholics and speak the Portuguese language.

(Macgregor's *Statistics.*)

CAPELL, EDWARD, was born in 1713, at Troston, in Suffolk. He was educated at Bury St. Edmund's, and spent the greater part of his life at Hastings and in London, occupying himself almost exclusively in studies relating to the works of Shakspere. He died Feb. 24, 1781, at his chambers in the Temple, London. As a commentator on Shakspere, Capell is ranked much more highly now than he was in his own times, but he *is really useful only as furnishing hints for others* to work upon. His chief works were 'Prolusions, or Select Pieces of Ancient Poetry,' 1760, 8vo.: 'Mr. William Shakespeare, his Comedies, Histories, and Tragedies,' &c., 1767, 10 vols. 8vo.: 'Notes and Various Readings to Shakespeare; to which is added, The School of Shakespeare, or Extracts from divers English Books that were in print in the Author's Time,' &c., 1783, 3 vols. 4to.

CAPELLA, or *α* Aurigæ, a star of the first magnitude, in the body of the Goat, which Auriga is represented as carrying.

CAPERCAILLIE, CAPERCALLY, or CAPERCALZE, the Scotch name for the Wood-Grouse (*Tetra urogallus*, Linn.), formerly a native of the British islands.

The Capercaillie, Wood-Grouse, or Cock of the Wood, is the *Coq de Bruyère* of Buffon, *Le Grand Coq de Bruyère* of Brisson, *Tetrao Auerhahn* of Temminck, *Auerwaldhuhn* of Bechstein, *Auerhahn*, of Frisch, *Cock of the Mountain* of Willughby.

This noble bird was once indigenous in our islands, and till lately lingered in the islands of Scotland and some of the districts of Ireland; but the forests which once sheltered it have been cut down, or greatly reduced, and from this cause and others it appears to have been gradually extirpated. Within the last few years however various attempts have been made to introduce the species again into the woods of the Highlands, and we believe not altogether unsuccessfully. For details of the experiments made by Lord Fife in 1828, 1829, 1830, and 1831, see Wilson's Paper in 'Jameson's Journal,' July 1832.

The Capercaillie is abundant in Norway, Sweden, Russia towards Siberia, and the north of Asia. It is common in Livonia, Germany, Hungary, wherever pine forests of sufficient extent afford it a home. It is found in several parts of the Alps, and, if Pennant be correct, in some parts of Italy and France.

The male Capercaillie is equal in size to a turkey, and weighs from 12 to 15 lbs. The female is only two-thirds of the size of her mate. The breeding season commences early in the spring, before the snow is off the ground. At this period the cock stations himself on a pine, and commences his call to the females. This call is termed *play* in Sweden, and is heard from the dawn of day till the dusk of the evening.

'During his play,' says Mr. Lloyd, 'the neck of the capercali is stretched out, his tail is raised and spread like a fan, his wings droop, his feathers are ruffled up, and in short he much resembles in appearance an angry turkey-cock. He begins his play with a call something resembling *Peller, peller, peller.* These sounds he repeats at first at some little intervals; but as he proceeds they increase in rapidity until at last, and after perhaps the lapse of a minute or so, he makes a sort of gulp in his throat, and finishes with sucking in, as it were, his breath.

'During the continuance of this latter process, which only lasts a few seconds, the head of the capercali is thrown up, his eyes are partially closed, and his whole appearance would denote that he is worked up into an agony of passion. At this

time his faculties are much absorbed, and it is not difficult to approach him: many, indeed, and among the rest Mr. Nilsson, assert that the capercali can then neither see nor hear; and that he is not aware of the report or flash of a gun, even if fired immediately near to him. To this assertion I cannot agree, for though it is true that, if the capercali has not been much disturbed previously, he is not easily frightened during the last notes, if so it may be termed, of his play; should the contrary be the case, he is constantly on the watch, and I have reason to know that, even at that time, if noise be made, or that a person exposes himself incautiously, he takes alarm and immediately flies.

'The play of the capercali is not loud, and, should there be wind stirring in the trees at the time, it cannot be heard at any considerable distance. Indeed, during the calmest and most favourable weather, it is not audible at more than two or three hundred paces.

'On hearing the call of the cock, the hens, whose cry in some degree resembles the croak of the raven, or rather, perhaps, the sound *Gock, gock, gock*, assemble from all parts of the surrounding forest. The male bird now descends from the eminence on which he was perched to the ground, where he and his female friends join company. The capercali does not play indiscriminately over the forest, but he has his certain stations (*Tjador-lek*, which may perhaps be rendered his playing grounds). These however are often of some little extent. Here, unless very much persecuted, the song of these birds may be heard in the spring for years together. The capercali does not during his play confine himself to any particular tree, as Mr. Nilsson asserts to be the case; for, on the contrary, it is seldom he is to be met with exactly on the same spot for two days in succession.

'On these *lek* several capercali may occasionally be heard playing at the same time. Mr. Greiff, in his quaint way, observes, "it then goes gloriously." But so long as the old male birds are alive they will not, it is said, permit the young ones or those of the preceding season to play. Should the old birds, however, be killed, the young ones, in the course of a day or two, usually open their pipes. Combats, as it may be supposed, not unfrequently take place on these occasions, though I do not recollect having heard of more than two of those birds being engaged at the same time.

'Though altogether contrary to law, it is now that the greatest slaughter is committed among the capercali; for any lump of a fellow who has strength to draw a trigger may, with a little instruction, manage to knock them down.'

To those who wish to enter into the exciting details of capercaillie shooting we recommend Mr. Lloyd's interesting work on 'Northern Field Sports.'

The hen makes her nest upon the ground, and lays from 6 to 12 eggs, and her young keep with her till the approach of winter. The young cocks separate from the mother before the hens. The food of this species consists principally of the leaves of the Scotch fir, rarely those of the spruce, also of juniper berries, cranberries, blueberries, &c., and occasionally in winter the buds of the birch. The young are sustained at first on ants and their larvæ, worms, insects, &c.

Professor Nilsson assures us that the capercaillie is often reared up in a domestic state in Sweden, and is bold and disposed to attack persons like the turkey-cock. Both this naturalist and Mr. Lloyd affirm that these birds will breed with due care in confinement, and they record several instances, which came under their own knowledge.

In the early part of spring the London markets are supplied with capercaillies in abundance from Norway, and, owing to the rapidity of steam navigation, the birds are perfectly fresh. The flesh, especially that of the female, is excellent.

Description.—Male.—Elongated feathers of the throat black; the rest of the head and neck ashy black; eyebrows red; wings and scapulars brown, sprinkled with small black dots; breast changeable green; belly and abdomen black, with white spots; rump and flanks sprinkled with ashy zigzags on a black ground; tail-feathers black, with some small white spots disposed at about two inches from their extremities; bill nearly three inches long, very strong, hooked, and of a whitish horn colour; iris clear brown; length about 2 feet 10 inches; usual weight from 9 to 12 lbs. Graves says that the fine specimen from which his figure was taken measured 3 feet 1½ inch in length, 7 feet 5 inches in breadth, and weighed 15 lbs. 2½ ounces.

Capercaillie (*Tetrao urogallus*), male.

Female.—Striped and spotted with red or bay, black, and white; feathers of the head bright ruddy, and those of the breast deep red; tail ruddy, striped with black; bill blackish brown; size about one-third less than that of the male.

In the male the windpipe makes a loose fold of two curves before it enters the chest, gaining thereby a great increase of length. It is simple in the female.

We may here allude to the *Tetrao medius*, or Rákelhan, which has been considered by many as a hybrid between the male Capercaillie and the female Black Grouse, but which, as is now proved,

is a pure species, though very rare. Locality Norway and Sweden.

CAPERNAUM, an ancient city of Galilee, about 70 miles N. by E. from Jerusalem, on the north-western shore of the Sea of Tiberias. It was here that our Saviour commenced his public ministry; and in its neighbourhood he delivered the Sermon on the Mount. No town now exists on the spot, but the former existence of a town is proved by ruins spread over a considerable extent.

CAPERS. [CAPPARIDACEÆ.]

CAPET, HUGUES, the founder of the third, or, as it has been called from him, the Capetian dynasty of French princes, of whom little authentic information is preserved. His own great fief, as Count of Paris, gave him considerable predominance; and on the death of the last of the Carlovingians, A.D. 987, Louis V. the Slothful (*Le Fainéant*), he successfully usurped the throne, and was confirmed in its seizure by the barons, who invested him with the title of king. Both the dates of his usurpation and of his death are uncertain, but the former is usually fixed in A.D. 987; the latter A.D. 996. Thirteen kings (fourteen if we include John, who lived about eight days, and was never crowned) succeeded from his family: and it was not until 1328 that Philip VI. of Valois transferred the sceptre to his own race. On the accession of the line of Bourbon, the name was either adopted by them or given to them; and all the processes in the trial of Louis XVI. were directed against Louis Capet.

CA'PIAS. This term denotes in law certain writs so called from the occurrence of the word capias (that is, 'take') in the ancient Latin forms:—

Capias ad respondendum.—This is a judicial writ by which all *personal* actions (that is, such as do not relate to land or real property) are commenced in the superior courts of common law against any person whom it is intended to arrest or hold to bail, and who is not already in custody. Since the passing of the Uniformity of Process Act (2 Will. IV. c. 39), the form of the writ of *capias ad respondendum* therein prescribed is the same in all the courts; and it is also the actual commencement of the action. In form it is a command from the king to the sheriff, to take the defendant if he shall be found in his bailiwick, and him safely keep until he shall have given bail, or made a deposit according to law in a specified action at the suit of the plaintiff, or until the defendant shall by other lawful means be discharged from custody.

Capias ad satisfaciendum, usually called a *ca sa*, is a writ of execution to imprison the person of the defendant after judgment has been obtained against him, until he make satisfaction to his creditor. It commands the sheriff to take the defendant, and him safely keep, so that he may have his body in court on the return of the writ *to satisfy* the plaintiff.

The effect of taking a party in execution upon a *ca sa* is, that it operates as a satisfaction of the debt, and no other writ of execution can be sued out upon the same judgment against the defendant's goods or lands, unless he die in confinement or escape from custody.

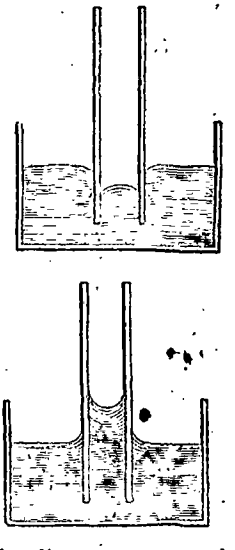
Capias ad satisfaciendum to fix the bail.—When the defendant is at large after the judgment, and the bail are responsible, it is often of importance to fix them with the debt; for this purpose a *ca sa* is sued out against the principal; but the *ca sa* is merely intended as a notice to the bail of the plaintiff's intention to proceed against them; and, if they do not render their principal in time, the plaintiff may proceed for the debt against the bail.

Capias utlagatum is a writ that lies against a person who has been outlawed in any action.

(Tidd's *Practice*, *Index*, tit. *Capias*; Archbold's *Practice* by Chitty.)

CAPILLAIRE. [ADIANTUM.]

CAPILLARY ATTRACTION and REPULSION. These names have been given to the properties of matter which cause the ascent above or descent below the level of the surrounding fluid, which takes place when a tube of very small diameter (like a hair, *capillus*) is dipped into water, mercury, &c. This phenomenon, which excited early remark from its apparent exception to the laws which regulate the equilibrium of fluids, has given its name to a theory of the action of the parts of solids and fluids upon each other. We shall, however, in this article confine ourselves to the description of phenomena which are strictly capillary, in the original sense of the word, referring to COHESION for an account of the actions of the parts of solids on one another, and to THEORIES OF MOLECULARITY, for the general principles of such actions.



The preceding diagrams represent the appearance (in section) of a fluid into which a tube of very small diameter is plunged. The fluid in the tube either rises above or sinks below the level of that on the exterior, and at the same time is slightly curved at its upper surface. It is also to be observed, that in cases where the fluid stands higher within the tube than without, as is the case with water and glass, its upper surface is

always concave; but that, when the fluid is lower within the tube, as with mercury and glass, it is convex: both appearances are represented in the diagrams. The different appearances presented by water and mercury, with respect to glass, may be thus stated. A drop of water upon a level piece of glass becomes hemispherical, or nearly so, and adheres: a very small drop of mercury retains its spherical form, and rolls easily. It is not true, however, that the glass actually repels the mercury. M. Gay-Lussac found that a disc of glass of 120 millimetres (4 inches 7-tenths) in diameter required a separating force of from 150 to 300 grammes (a pound avoirdupois is 453½ grammes) to detach it from the surface of a bath of mercury. The inference is, that the attraction of the particles of mercury upon mercury is stronger than that of the particles of glass upon mercury, but that the action of glass upon water is stronger than that of water upon water.

The laws according to which a fluid rises or falls in a tube have been experimentally determined, and are found to be as follow:—1. When a tube of dry glass is plunged in a vessel of water, the attraction of the glass does not extend beyond the depth of the very thin film of water which would adhere to the interior surface if the tube were drawn out; for, if the tube previously moistened by such film were plunged in water, the rise would be much less than in the other case; and, whatever be the substance of the tube so moistened, the elevation of the water in it is found to be the same. 2. When cylindrical tubes of different diameters are compared, the elevation is inversely proportional to the diameter; also, according to the experiments of M. Gay-Lussac, a wet tube of one millimetre in diameter causes an elevation of 29.79 millimetres of water; and a tube of glass of two millimetres in diameter causes a depression in mercury of 4.58 millimetres. 3. If the interior of the tube be conical, the elevation or depression in it is found to depend on the diameter at the upper part only of the elevation; and to be the same as in a cylindrical tube of that diameter. 4. If the tube be double (one tube within another), the fluid rises to the same height in the interval between the two tubes, as it would do in a tube with that interval for its radius. 5. Between two parallel plates immersed at a very small interval, the fluid rises as high as in a tube with that interval for its radius. 6. Between two plates vertically placed, but inclined at a very small angle (like a double screen nearly closed), the fluid rises higher and higher as we proceed towards the upright line of junction; and the curve of the upper surface of the fluid is an hyperbola.

We have room only to give the following brief account of the manner in which the phenomena may be supposed to arise. Imagine a glass tube open at both ends to be partly immersed in a fluid; then a ring of its interior surface, immediately above the surface of the fluid in the vessel, will exercise an uncompensated action on the fluid within the tube, but every where below the latter surface, down to the lower extremity of the tube, the action of the glass on the fluid is equal upwards and downwards: at this extremity there is a difference between the attractions of the glass and fluid, the excess being downwards if the action of fluid on fluid be the stronger, and upwards if that of the glass on the fluid be the stronger (the attractions being supposed to extend to very small distances only). If therefore twice the action of the glass on the fluid, or the sum of the actions at the level of the fluid in the vessel and at the bottom of the tube exceeds that of fluid on fluid, the weight of the column in the tube will be diminished by the excess of the upward attraction. In order therefore that this column may be in hydrostatical equilibrium with the surrounding fluid, its height must increase till the weight arising from the excess of length may produce a counterpoise. Similarly, if the action of the fluid on fluid exceed the sum of the actions of the glass on the fluid, there will be a downward attraction of the column in the tube equivalent to an increase of weight: the top of the column will therefore descend till the weight is in equilibrio with the pressure of the exterior fluid.

Experiments on capillary action have been made from the time of Newton; but it is only since the application of the molecular theory by Laplace that it seems to have been admitted that the internal coating of the tube immediately adjacent to the fluid is the cause of the phenomenon. The results of various observers upon glass and water give elevations of from two to five inches in a tube of one-hundredth of an inch in diameter; but the elevations of fluids vary with the temperature, the former diminishing as the latter increases.

In the 'Report on the Theory of Capillary Attraction,' by Professor Challis, 'Rep. Brit. Ass.' for 1831, p. 253, we have the following statement:—From observations of the elevation of water, alcohol, and oil of turpentine, in tubes of white glass, the forces necessary to elevate a disc of the same substance 118.336 millimetres in diameter were *theoretically* deduced, and found to be 59.59, 31.14, and 34.35 grammes for the three fluids. Experiment determined the same forces to be 59.40, 31.08, and 34.10 grammes.

(See Dr. Young's *Lectures on Natural Philosophy*; Poisson's *Nouvelle Théorie de l'Action Capillaire*.)

CAPILLARY VESSELS, so called from their hair-like minuteness. The blood-vessels of the body consist of arteries and veins, the arteries carrying blood from the heart, and the veins returning it to the heart. It has been shown [ARTERY] that the arterial system is arborescent, that is, that the branches which spring from the aorta successively increase in number and diminish in size as they proceed from the heart towards their ultimate terminations in the system. These ultimate terminations of the arteries, together with the first origins of the veins, constitute a peculiar system of vessels termed the capillary system. These capillary vessels are too minute to be detected by the naked eye; but in the transparent parts of the body of a living animal, when brought under the field of the microscope, they become perfectly visible, as in the web

of the frog's foot and the mesentery of the rabbit. The greater number of the arteries and veins are then seen to be directly continuous with each other, no substance intervening between the two orders of vessels.

The minute capillary vessels are totally distinct both in structure and office from the large trunks from which they spring. All the tunics of the capillary arteries diminish in thickness and strength as the tubes lessen in size, but more especially the middle or fibrous coat.

Of the capillary arteries which it has been stated terminate by direct communication with the capillary veins, 'some are large enough to admit of three or four of the red particles of the blood abreast; the diameter of others is sufficient to admit only of one; while others are so small that they can transmit nothing but the serum of the blood.'

All the great organic functions of the living body are performed mainly by the capillary arteries. Their action is essential to secretion, nutrition, calorification, and every other process which is indispensable to the support of life.

(Dr. Craigie's *General Anatomy;* Grainger's *Elements of General Anatomy;* Dr. Southwood Smith's *Philosophy of Health;* Miller's *Physiology;* Carpenter's *Human Physiology.*)

CAPITAL is a term used in commerce to express the stock of the merchant, manufacturer, or trader, used in carrying on his business, in the purchase or manufacture of commodities, and in the payment of the wages of labour; and is understood not only of money, but of buildings, machinery, and all other material objects which facilitate his operations in trade. The term itself and the practical qualities and uses of capital are sufficiently understood in this its commercial sense. But capital, in a more extended form, embraces not only the capital of particular individuals, but the entire capital of a country. In this latter sense, capital may be defined as the products of industry possessed by the community, and still available for use only, or for further production.

Capital is first called into existence by the natural foresight of man, who even in a savage state discerns the advantage of not immediately consuming the whole produce of his exertions in present gratification, and stores up a part for his future subsistence. The greater proportion of mankind possess this quality, and those who do not possess it are admonished of its value by privation. A desire to accumulate some portion of the produce of industry being natural to mankind and nearly universal, the growth of capital may be expected wherever the means of accumulation exist; or, in other words, wherever men are not obliged to consume the whole products of their labour in their own subsistence. From the moment at which a man produces more than he consumes, he is creating a capital; and the accumulated surplus of production over the consumption of the whole community is the capital of a country.

Those parts of the products of labour which are reserved for the reproduction of other commodities, and those parts which are intended solely for use

or consumption, have constituted a distinction amongst political economists. Without going so far as to class the one as capital, and the other as revenue, as Adam Smith and others have done, it is undoubted that the accumulation of capital proceeds slowly or rapidly in proportion as one or other of these modes of expenditure is most prevalent.

As it is evident that capital must increase in the ratio in which the products of labour exceed the expense of subsistence, it would seem to follow, as a necessary consequence, that when a certain amount of capital has already been produced, the higher the rate of profit which may be obtainable from such capital, the greater will be the means of further accumulation. If three per cent. profit upon a man's stock will enable him to subsist as he has been accustomed, and to lay aside one per cent annually as capital, the rise of profit to six per cent. would at once give him the power of adding four per cent., instead of one, to his capital, so long as he made no change in his style of living: and thus the doubling of the rate of profit would add to the means of accumulation in the proportion of four to one.

But, apart from abstract reasoning, does the experience of different countries bear out the same conclusion? These questions do not always receive the same answer. Mr. M'Culloch compares the progress of the United States of America, in wealth and population, with that of England and Holland, and ascribes the comparative rapidity of their advancement to the fact that the rate of profit is generally twice as high in America as in either of the other countries ('Principles of Polit. Econ.,' p. 107). He adds (p. 110), that if the rates of profit have become comparatively low, the condition of a nation, 'how prosperous soever in appearance, is bad and unsound at bottom.' Professor Jones, on the other hand, denies this inference, and takes a more encouraging view of the state and prospects of our own country. He says, 'That fall of the rate of profits, which is so common a phenomenon as to be almost a constant attendant on increasing population and wealth, is, it will be seen, so far from indicating greater feebleness in any branch of industry, that it is usually accompanied by an increasing productive power in all, and by an ability to accumulate fresh resources more abundantly and more rapidly. So far therefore is this circumstance from being, as it has hastily been feared and described to be, an unerring symptom of national decay, that it will be shown to be one of the most constant accompaniments and indications of economical prosperity and vigour.' ('Distribution of Wealth,' Preface, p. xxxii.)

These opinions, apparently conflicting, upon matters of fact may prove, upon examination, not to be wholly irreconcilable. The soundest general conclusions appear to be these: that a high rate of profit is favourable to accumulation; that rich and populous countries are denied this advantage; that, if they enjoyed it, their capital would continue to increase more rapidly than it does, in fact, increase; but that, under ordinarily favourable circumstances, the masses of inherited capital

and the aggregate savings of vast numbers of capitalists still facilitate accumulation in a greater ratio than the increase of population, which a high state of civilisation has a tendency to check.

The consideration of the application and uses of capital will be disembarrassed of much complexity by explaining, at the outset, the distinction raised by political economists between what is called productive and unproductive labour and expenditure. The end of all production is use or consumption: some products are immediately destroyed by the use of them, as food or coals; others are consumed more slowly, but are ultimately destroyed by use, as clothes or furniture: but, whatever the durability of the thing produced, its sole use is the enjoyment of man. A man is rich or poor according to his power of obtaining the various sources of enjoyment which the skill and industry of others produce; and the aggregate of such permanent sources of enjoyment constitutes the wealth of nations. Whatever labour or expenditure therefore may be devoted to the increase or continuance of those sources of enjoyment must be deemed productive; and labour and expenditure which have no such tendency must be viewed as unproductive.

The uses of capital, as applied to its most important end, are the employment and aid of productive industry. Its first and most important use is the division of employments, which, though necessary for any advance in arts, is impracticable without some previous accumulation of capital. Until there is a fund for employing labour, every man's business is the seeking of his own daily food; but, as soon as the capital of another secures that for him, his labour is available for the general good. The more capital is accumulated, the more extended are the facilities for the indefinite distribution of employments, according to the wants of the community.

Capital may be applied either directly in the employment of labour, or directly in aid of labour; it may be spent in the food and clothes of labourers, or in tools and other auxiliary machinery to assist their labour and increase its productiveness. The former is usually termed circulating capital, and the latter fixed capital.

Not only does capital facilitate divisions of employment, and increase the productiveness of industry, by which the enjoyments of man are multiplied, but it actually produces many sources of power and enjoyment which without it could have no existence. It is the foundation of all social progress and civilisation, for without it man is but a savage. It must precede his mental culture, for until it exists his noble endowments are idle or misemployed.

The paramount value of capital to the prosperity of a nation should never be overlooked by a government. Unwise laws, restrictions upon commerce, improvident taxation, which are unfavourable to its growth, should be dreaded as poison to the sources of national wealth and happiness. But, while the natural growth of capital should not be interfered with by restrictions, the opposite error of forcing it into particular channels should equally be avoided. Industry requires from a government nothing but freedom for its exercise, and capital will then find its own way into the most productive employments; for its genius is more fertile than that of statesmen, and its energy is greatest when left to itself. The best means of aiding its development are a liberal encouragement of science and the arts, and a judicious system of popular education and industrial training; for, as 'knowledge *is* power,' so is it at once the best of all riches, and the most efficient producer of wealth.

(Smith's *Wealth of Nations*, Book ii. ch. 3, with Notes by M'Culloch and Wakefield; Ricardo *On Political Economy and Taxation*; M'Culloch, *Principles of Political Economy*; Professor Jones *On the Distribution of Wealth*; *Essays on some Unsettled Questions of Political Economy*, by John Stuart Mill.)

CAPITAL. [COLUMN.]

CAPITANA'TA, a province of the kingdom of Naples, also called Puglia Piana, to distinguish it from Puglia Pietrosa or Terra di Bari and Otranto, is bounded N.E. by the Adriatic, N.W. by the district of Sannio, S.W. by Principato Ultra, from which it is divided by the central Apennine ridge, and S.E. by Basilicata and Terra di Bari. The length of the province from the mouth of the Biferno to that of the Ofanto is 75 miles, and the average breadth is about 50 miles. The north and east of the province are crossed by offshoots from the Apennine ridge, one of which, Monte Gargano, projects eastward into the sea, forming a peninsula, which from its shape and position has been called the Spur of Italy. All the rest is a vast plain, without trees, and known by the name of Tavoliere di Puglia, which slopes gently down from the Apennines to the Adriatic. The chief rivers are the Fortore, which enters the sea near Lake Lesina; the Candelaro, which is formed of several streams rising in the Apennines and in the offset which fills up the peninsula of Gargano, and enters the marsh called Lago Salso a little south of the town of Manfredonia; the Cervaro and Carapella, which unite near the sea a few miles north of Lake Salpi; and the Ofanto, the largest river of the province, which rises in the central Apennines about 25 miles north-east from Salerno, and enters the Adriatic a little north of Barletta, after a rapid course of about 60 miles.

The surface of Capitanata is 2359 square miles, and the population in 1839 was 273,671. About one-sixth of the surface, among the hilly regions of Gargano and the Apennines, is covered with forests. The great plain of the Tavoliere occupies nearly half the surface of the province. Two-thirds of it are left for the pasture of migratory flocks of sheep belonging to this and the neighbouring provinces, and have no resident population, and the other third is cultivated, with the exception of a portion of it, which is covered with marshes. The breed of sheep has been improved by the cross of merinos. The breed of horses has also been improved. Capitanata is the most productive portion of the kingdom of Naples in the wheat called by the Italians *soft corn*, which is used for making bread. [BARI, TERRA DI.]

Large quantities of this grain are exported from the harbours of Barletta and Manfredonia. The districts of San-Severo and Lucera are surpassingly productive in corn. From the Gargano, which is the best cultivated district in the province, oil, lemons, oranges, carobs, capers, and terebinth gum are exported. Large eels from the lakes of Varano and Lesina, in the same district, are exported to Naples. Cheese, cattle, and ponies, form the other articles of exportation. Between the mouth of the Carapella and that of the Ofanto is the great marsh called Lago Salpi, 20 square miles in extent, and only 2 feet in its greatest depth; it is nearly dry in summer, and poisons the air all around.

Manfredonia, on the Gulf of Manfredonia, and south of Monte Gargano, is the only harbour in the province, but there is not depth of water for large vessels. The town is well built, is the seat of an archbishop, has a castle, several churches, and 5000 inhabitants. Near Manfredonia are saltworks. The Sipontine marshes in the neighbourhood, which affected the health of the town, have been drained.

Foggia, the capital of Capitanata, is a well-built modern town of 21,000 inhabitants, the seat of the provincial courts of justice, and the centre of all the trade of the province. Around the town are large plantations of olives, vines, and other fruit trees. Foggia is 78 miles E.N.E. from Naples, and 20 S.W. from Manfredonia. Lucera, an episcopal town 10 miles W. from Foggia, is built on a hill; it possesses an old castle, a fine old cathedral, a royal college, and a population of 8000. San Severo, 18 miles N.W. from Foggia, is the seat of a bishop, and has 16,000 inhabitants. Monte Sant' Angelo, built on Monte Gargano, 9 miles N.E. from Manfredonia, is in a romantic situation, and contains the cave and sanctuary of San Michele. East of Monte Gargano is the town of Viesti, on the Adriatic coast, which has 4000 inhabitants. In the south part of the province are Bovino with 4000 inhabitants; Troja, a well-built town, with 5000 inhabitants; and Ascoli di Satriano.

(Afan di Rivera, *Considerazioni sulle due Sicilie; Lettera da San Severo;* Macgregor's *Statistics.*)

CA'PITE, TENANTS IN. [Baron, Barony; Feudal System.]

CAPITO, ATEIUS C. [Labeo.]

CAPITOL, CAPITO'LIUM, MONS CAPITOLI'NUS, a hill, a fortress, and a temple, celebrated in the history of ancient Rome: the hill is now called by corruption Campidoglio. It rises on the eastern skirts of the inhabited part of modern Rome, which it divides from the Forum and the other *forsaken* districts of the ancient city. The Capitoline Mount is about one mile in circumference at its base. At the south end was the Tarpeian rock, down which state-criminals were hurled. The height of this side of the hill is very much reduced, the ground at the foot of it having been considerably raised by ruins and rubbish, and the rock itself having been sloped down, and houses built against it. Still it rises abruptly, in one place to the elevation of 65 feet, at the back of the Caffarelli Gardens. The height of the Capitol, taken at the pavement of the church of Ara Cœli, which is the highest summit, is 155 feet above the sea, 135 above the Tiber, taken at its medium height, and about 90 feet above the present surface of the Forum, which however is in several places 20 feet higher than its ancient level.

The great temple on the Capitoline was commenced by the first king Tarquinius, and continued by Tarquinius the last king, who dedicated it to Jupiter Capitolinus. This temple was burnt in the civil war of Marius, but Sulla rebuilt it with greater splendour. This temple was the principal sanctuary of Rome, to which the victorious generals and emperors went in triumphal procession to sacrifice to the gods. Other temples were raised successively on the Capitoline hill, such as that of Juno Monéta, with the mint annexed to it.

The principal buildings of the modern Capitol consist of three palaces, the work of Michel Angelo, forming three sides of a square, in the middle of which stands the equestrian statue of Marcus Aurelius. The open side is to the north-west towards the modern city. One of these palaces is the Capitoline Museum, which contains one of the finest collections of statues and sculptures in Italy.

CAPITULA'RIUM, literally 'a book divided into chapters,' was the name given to the laws promulgated by the French kings of the first and second races, in the great assemblies of the nobles and bishops which formed the states of the kingdom, for the administration of civil and ecclesiastical affairs. These laws, being classed under heads or chapters, were called Capitularies. Childebert, Clotarius, and Dagobert, and afterwards Charlemagne, Louis le Débonnaire, Charles the Bald, &c., issued Capitularies. Those o Charlemagne are the most celebrated. Baluze published a complete collection of all the Capitularies issued by the kings of the first and second race, with notes, entitled 'Capitularia Regum Francorum,' 2 vols. folio, Paris, 1677.

CAPITULATION, a series of articles expressing the conditions under which a fortress is surrendered to an enemy.

The agreement by which an army or a large division of troops surrenders to a superior force, or engages to evacuate the territory which it occupies, when its strength and condition are yet such as to make itself respected by the enemy, is called a Convention. Such was that made at Cintra, or rather at Lisbon, between the generals of the French and English armies on the departure of the former from Portugal in 1808.

When the provisions and ammunition of a garrison are nearly expended, when breaches have been made in the ramparts of the fortress, and no chance remains of being succoured, the governor of the place is justified in entering into an agreement with the besiegers respecting the terms by which he consents to deliver his charge into their hands; and by the rules of war, as well as from the regard due to a gallant adversary, he is entitled to obtain an honourable capitulation. It may be observed, that if the governor should postpone the proposals to surrender till his provi-

sions are entirely exhausted, the besiegers may refuse to grant terms to the garrison, which must then surrender at discretion.

By the terms of a capitulation the arms and military stores in the place are generally given up to the besiegers; the officers and troops of the garrison retaining only their private property, and being allowed to march out with the honours of war, that is, with drums beating, colours flying, &c. When necessary, a convoy is allowed them for protection till they arrive at the place of their destination.

CAPI'TULUM, a head of flowers, a particular form of inflorescence. The dandelion and all Compositæ have an inflorescence of this nature; it is vulgarly looked upon as a flower.

CAPNOMOR, a colourless, limpid, volatile oil, obtained from the heavy oil of tar; its odour resembles that of ginger, and it has a styptic after taste. Its density is 0.9775. It is perfectly neutral, boils at 345° Fahr., and distils unaltered.

CAPO D'ISTRIA. [ISTRIA.]

CAPO D'ISTRIA, COUNT OF, born at Corfu in 1780. His father was chief of the provisional government of the Ionian islands in 1799, when the Russians took possession of them; and when, in 1806, the Seven Islands, by the treaty of Tilsit, were placed under the protection of Bonaparte, both Capo d'Istria and his father left Corfu and entered the service of Russia. In this service the talent of Capo d'Istria was recognised and promoted. In 1812, during Bonaparte's invasion of Russia, he effected a peace with Turkey, which enabled the Emperor Alexander to recall the army of Moldavia to the Berezina. In 1813 he was sent by Alexander as his minister plenipotentiary to Switzerland, and drew up a declaration promising the re-establishment of Helvetian independence and the restitution of all the territory that the French had taken from the Swiss. These promises were well kept, and the Count so conducted himself as to merit the esteem of the Swiss. In 1815 he was with the Emperor Alexander at Paris, and was his plenipotentiary in the definitive treaty of peace with France. A short time afterwards the Emperor Alexander appointed him one of his secretaries of state for foreign affairs, in which capacity he had a principal share in the diplomatic negotiations respecting Greece, which took place from 1815 to 1827. In 1828 he was himself installed president of the Greek government. His administration was highly unpopular, and he was suspected of a desire to make himself king or perpetual and despotic president of the Greeks, and also to render Greece wholly subservient to Russia. In 1829, when the crown of Greece was offered to Prince Leopold (now king of the Belgians), he by his representations mainly induced that prince to decline accepting it, which he did definitively on the 21st of May, 1830. On the 9th of October of the following year, Capo d'Istria was assassinated at Napoli di Romania, on the threshold of a church, by George, the son, and Constantine, the brother, of Pietro Mauromichali, the old bey of Maina, whom he had detained for many months in prison without trial or even a specific accusation.

CAPONNIERE, in fortification, is a passage protected on the right and left by a wall or parapet. The term is generally applied to that by which the communications are made across the main ditch of a fortress to the outworks, or from the covered-way to the gorge of an advanced work. When a passage is so situated as to require protection on one side only, the work is called a demi-caponniere.

The protecting parapet is generally of earth, with its upper surface descending gradually to the bottom of the ditch, in order that the enemy may find no cover before it. If the passage should be exposed to a plunging fire on either or both sides, it may be further protected by a parados, or elevation of earth extending along its centre. Sometimes the caponniere is a vaulted gallery of brickwork, the sides of which are pierced with loop-holes or narrow openings, for the defence of the ditch by a fire of musketry.

Palisade caponnieres are formed across the ditches of field-redoubts when those ditches are incapable of being defended from the parapets. If covered with a roof for protection against shells or grenades, that roof should be kept below the natural ground, in order that it may be concealed from the view of the enemy at a distance.

CAPPADO'CIA, a country of Asia Minor, usually spoken of in two divisions—1, Cappadocia the Great, or Cappadocia bordering on the Taurus (Strabo), also called Cappadocia simply; and 2, Cappadocia bordering on the Pontus, often called Pontus only. Cappadocia on the Pontus includes the country north of the range of mountains anciently called the Paryadres. In its comprehensive sense the term Cappadocia included nearly the whole of the Turkish province of Roum, and a great part of Karamania. It was bounded on the N. by the Pontus Euxinus (Black Sea), on the S. by Taurus, which divided it from Cilicia, on the W. by Paphlagonia, Phrygia, and Galatia, and on the E. by the Euphrates.

Cappadocia contains extensive plains of great fertility. Of the mountains the principal is the Taurus, which forms the southern boundary. Two other important chains, the Anti-Taurus and the Paryadres (Keldir), run nearly parallel from Armenia into the centre of Cappadocia, where they form the high mass of Mount Argæus (Argis-Dagh). Argæus is covered with perpetual snow. Cappadocia the Great generally has little wood. The part between Mount Argæus and Mazaca (Kesarieh), and indeed most of this district, appears to have been the seat of volcanic action (Strab. p. 538). The high table-lands of this country are admirable pasture-land.

The principal towns of Pontic Cappadocia were on the coast. A little east of the mouth of the Halys was Amisus (Samsun); and farther east was Cérasus, the modern Kharesoun, where cherry-trees grow wild in great abundance on the hills (Tournefort, 'Relat. d'un Voyage au Levant,' ii. p. 221): it was from this place that Lucullus brought cherries into Italy on his return from the Mithridatic War. Just upon the eastern boundary of Cappadocia on the Pontus stands Trapezus, the modern Trebizond, originally a Greek city, a

colony from Sinópe, where the ten thousand Greeks met with a hospitable reception on their retreat after the battle of Cunaxa.

The chief towns inland were Amasia, the birth-place of Strabo, Mazaca, Comána (in Pontus), the great emporium for the Armenian merchants (Strab. p. 559), and Comana in Cappadocia the Great, the modern Bostan, which contained a great temple of Bellona. To the west of Comana, near the boundary of Lycaonia, was Tyana, the birth-place of Apollonius. The principal rivers of Cappadocia are the Halys (Kizil-Ermak) and the Iris (Yeshil-Ermak), both of which flow into the Euxine; and the Melas, which flows into the Euphrates. The Kizil-Ermak flows through a country abounding in salt-hills, and hence Strabo supposes the ancient name to have been derived (*p. 546, d*). The Halys rises further to the east than is represented in the old maps. [ANATOLIA.] The Iris flows through Amasia.

Cappadocia abounded in salt, iron, and silver. The iron mines in the north-east of Pontus were worked by the Chálybes, and a people still work the iron ore in the same parts.

Darius Hystaspis is said to have divided Cappadocia into two satrapies. The satraps appear to have been kings of the countries tributary to the Persian monarch, and hence an hereditary succession is observed.

The first king of Cappadocia, according to Strabo (xii. p. 534 *a*), was Ariarathes. A list of the kings is given by Clinton ('Fasti Hell.'). On the death of Archeláus, the last king, about A.D. 17, Cappadocia was reduced to a Roman province.

A list of the kings of Pontus is given by Clinton. Ariobarzanes was one of them.

CAPPARIDA'CEÆ, a natural order of dicotyledonous plants.

Some of the American species of Capparidaceæ are very poisonous; others act as vesicatories; and a few are merely stimulant. To the latter class belongs the *Capparis spinosa* of the south of Europe. This plant grows naturally upon rocks and ruins all over the south of France and Italy, rendering them inconceivably gay with its large white blossoms, from the centre of each of which there springs a long tassel of deep lilac stamens. The flower-buds constitute the *capers* of the shops, the quality of which depends exclusively upon the age at which they are gathered, the smallest and youngest being the dearest and most delicate, and the largest and oldest the coarsest and cheapest. On an average each plant of the Caper-bush gives a pound of buds. The consumption of capers in this country is inconsiderable.

CAPRA. [GOAT.]

CAPRI, the Roman Capreæ, a rocky island in the Mediterranean, is situated at the southern entrance of the Bay of Naples. It is composed of hard calcareous rocks, which are disposed in two masses with a considerable hollow between them. The highest of these two masses, which is to the west, rises between 1600 and 1700 feet above the sea. It is called Anacapri, and a pretty little town upon it bears the same name. The inhabitants of Anacapri communicate with the other town and all the east of the island by means of a steep flight of 538 steps, which is carried down the face of a precipice. The other town, which is called Capri, stands much lower, on a shelving rock towards the eastern extremity of the island. The population of the island is about 3000. The products are oil and red and white wine, which is in great demand at Naples. Another important item of export consists of quails, which are annually captured at their seasons of passage in vast numbers. The whole circuit of the island is about 9 miles; but this narrow space is wonderfully crowded with a variety of scenic beauty and remains of antiquity. Extensive ruins of the villa of Tiberius, who resided a long time at Capreæ, are still shown, near a bold perpendicular cliff at the eastern end of the island.

CAPRIC ACID, obtained from the milk of the goat and the cow, occurs in crystalline needles, which liquefy at about 65° Fahr.; its specific gravity at this temperature is 0.910; it distils without alteration at a temperature above 212°. Its salts are called *Caprates*. It consists of C^{20}, H^{20}, O^3.

CAPRICORN, TROPIC OF. [TROPICS.]

CAPRICORNUS, the tenth constellation in the zodiac, as a constellation; but the part of the moveable ecliptic between 270° and 300° of longitude was also so designated. Around it, in the visible portion of the heaven, are Aquarius, Equuleus, Delphinus, Aquila, and Sagittarius. Lyra and Aquila will, when lengthened, not pass far from the two brightest stars in Capricornus, α and β.

The upper half of Capricornus is that of a goat, and the lower half that of a fish. In some of the Eastern zodiacs it is altogether an alligator or sea monster.

CAPRIFICATION, the process by which the maturation of the fig is accelerated in the Levant. It is well known that fruits which have been bitten by insects ripen sooner than others, the wound appearing to act as a stimulant to the local action of the parenchyma. This is turned to account by the Greeks in the following manner, which is called Caprification. When the cultivated fig is preparing for becoming ripe, a quantity of the branches of wild fig trees are brought into the fig orchards and placed upon the cultivated plants. The wild figs bring with them a great number of a small insect called *Cynips Psenes*, or *Dipóllepis Ficus Caricæ*, which fly among the cultivated figs and pierce their fruit for the purpose of laying eggs. This not only brings about an earlier ripening of the fig crop than would otherwise be obtained, but enables the cultivator to obtain two harvests a year. It is, however, said that the practice deteriorates the quality of the fruit. Caprification has been artificially imitated by puncturing a fig with an awl, and introducing a little oil into the wound, for the purpose of preventing its healing too soon. (De Candolle, 'Physiol. Végétale,' p. 580; and Treviranus in the 'Linnæa' for 1828, p. 70, tab. 1, fig. 1 and 2, in which last place the insect is figured.)

CAPRIFOLIA'CEÆ, a natural order of monopetalous dicotyledons. The type of the order is the genus *Caprifolium*, or honeysuckle. This

order was formerly associated with Cinchonaceæ, but is now separated from it on account of the absence of stipules from the species which compose it.

CAPRIFOLIUM. [Lonicera.]

CAPRIMULGIDÆ. [Night-Jars.]

CAPROIC ACID, obtained from milk, is a very fluid oil; it is colourless; very inflammable; its taste is acid and penetrating; its smell resembles that of acetic acid and perspiration. Its density at 70° Fahr. 0.622; it does not congeal at 12°, and boils below 212°. Its salts are termed *Caproates*. It consists of C^{24}, H^{24}, O^{3}.

CA'PROMYS. [Muridæ.]

CA'PROS, a genus of fishes of the section *Acanthopterygii*, and family *Scombridæ*.

Only one species of this genus has yet been discovered, the *Capros aper* of Lacepède and *Zeus aper* of Linnæus. The characters of the genus are:—Body short, somewhat ovate, much compressed, and covered with small serrated scales; mouth capable of considerable protrusion; dorsal fin emarginated (as in the dories), but no spines at the base, nor at the base of the anal fin.

Capros aper, or the *boar-fish*, in general appearance is not unlike the dory (to which it is in fact closely allied), but, independent of other characters, may be distinguished by its mouth being more attenuated and protractile, the body being covered with scales, and the want of long filaments to the dorsal spines. This fish appears to be most generally about six inches in length, of a pale carmine colour above, and silvery white beneath. It is a native of the Mediterranean, and has been found on our own coast, but very rarely.

(Yarrell's *History of British Fishes.*)

CAPS, PERCUSSION. It is explained in Arms how the earlier kind of fire-arms were discharged. The percussion-cap is a modern contrivance for this purpose. It depends on the property possessed by several chemical substances of exploding by a blow or percussion. Fulminating mercury was the first substance employed in this way; but as soon as it became known that a slight blow would explode certain powders, and that this explosion would ignite gunpowder, numerous improvements were introduced by degrees. Various salts and other chemical compounds, such as some of the chlorates, nitrates, and fulminates, will explode in this way, the most familiar example of which is afforded by the 'lucifers' or 'congreves' now sold so cheaply in the streets, and which ignite so readily by friction (in effect a series of minute percussions).

When the method was first introduced, there was some difficulty in causing the explosion of the mixture to ignite the gunpowder. But this is now effected by putting the detonating mixture into a little copper box or cell called a *cap*, which is adjusted over the touch-hole, and so arranged that a smart blow bursts the cap and explodes its contents: the little cell itself is destroyed, so that a new one is required for each firing. The size of the cell, or 'percussion-cap,' the nature of the mixture, the quantity employed with each charge, and the mechanism for firing it, have been the subjects of many improvements within the last few years, some of which are patented. The caps are now made in large numbers at Birmingham, in much the same manner as metal buttons, blanks being cut out of sheet copper or mixed metal, and stamped or pressed into the proper shape. One of the recent inventions has been to make the cap double, or one cap within another, with the mixture between the two, and a small hole in the inner one to communicate with the gunpowder.

Many contrivances have also been suggested for applying these caps under a modified form to larger guns; and the detonating compounds themselves have been brought into use for exploding the contents of bombs and shells.

CAPSELLA, a genus of plants belonging to the natural order *Cruciferæ*. The species of the Linnæan genus Thlaspi, without wings to their valves, form this genus. The best known is the common Shepherd's Purse (*C. bursa Pastoris*). It is an annual herb, very variable in habit, a follower of man, and springs up wherever he fixes his abode. (Koch, *Flora Germanica;* Babington, *Manual Brit. Bot.*)

CA'PSICUM, or Bird-Pepper, a genus of solanaceous plants, with the shell of the fruit fleshy and coloured, and containing a pungent principle, which also exists in its seed in great activity. On this account both the fruit and seeds of different species of capsicum are in request as a condiment, and either in the unprepared state, or ground into Cayenne pepper, form a considerable part of the stimulating vegetables used by man. In Europe the capsicum enters largely into the seasoning of food and the preparation of pickles; and in warmer countries it constitutes one of the first necessaries of life, either green or ripe. The species from which the fresh capsicums used in Europe are principally obtained is the *Capsicum annuum*, a weedy plant found wild in South America and the West Indies.

A much hotter species is the *Capsicum frutescum* or Goat-Pepper, a native of the East Indies, which differs from the *Capsicum annuum* in being a shrub, and in its fruit being very small. There is also a kind cultivated by the Chinese, with black fruit, and botanists recognise many others; but they appear to be in many cases mere varieties of *C. annuum* or *C. frutescum*.

The capsicum is easily brought to perfection in this country. Its seeds are sown in a hot-bed in the beginning of April; the young plants are managed like other tender annuals; and about the end of May they are planted in the open air under a south wall. They will readily ripen their fruit in such a situation.

CAPSTAN. [Windlass.]

CAPSULE, a vague name given by botanists to any kind of dry seed-vessel containing many cells and seeds. It usually opens by valves.

CAPTAIN (from the Latin *caput*, a head), in the navy, is an officer who has the command of a ship of war; and, in the army, is one who commands a troop of cavalry or a company of infantry.

In military affairs the title of Captain was originally applied, both in France and England, like that of General at present, to officers who were placed at the head of armies or to the governors

of fortified places. In the English service it was first introduced, in the sense in which it is at present used, during the reign of Henry VII., when it was borne by the officers commanding the yeomen of the guard, and the band of gentlemen pensioners.

To a naval captain, on service, is intrusted the important charge of a ship of war, with its artillery, stores, and frequently a numerous crew; and, since its transfer to the enemy would, by so much, increase his strength, it is evident that nothing but utter inability to defend it can justify a surrender.

The rank of post-captain was that at which, when the commander of a ship arrived, his promotion to *a flag* took place by seniority; but the title does not now exist. Several petty officers in a ship bear the title of captain. Thus there is a captain of the forecastle, a captain of the hold, captains of the main and fore tops, and of the after-guard.

In the army, a captain is the highest of those called regimental officers, and he is responsible for the efficiency of his company: he attends all parades, and observes that the clothes, arms, &c. of the men are in good order; he also superintends the supply of their pay and allowances.

For the regulation prices of captains' commissions in the army, their pay, and the pay of captains in the navy, the monthly lists may be consulted.

Lieutenants of ships of war rank with captains of the army; commanders rank with majors, and captains with lieutenant-colonels; but, after three years from the dates of their commissions, they rank with full colonels.

CAPUA is situated in one of the richest parts of the Terra di Lavóro, in a plain on the left bank of the Volturno. It is 15 miles N.W. from Naples, on the high road to Rome, about 12 miles from the embouchure of the Volturno, and 10 from the nearest part of the Mediterranean. It is strongly fortified. The population is near 10,000.

The modern city does not stand upon the same ground as the ancient, but it occupies the site of a much inferior town, called by the Romans Casilinum; and Santa Maria di Capua, a larger and more prosperous town than Capua itself, covers part of the ground of the ancient city of Capua. Santa Maria is nearly two miles higher up the Volturno, and at this point the remains of ancient edifices are very considerable. Capua was one of the Etruscan cities founded on this coast, and its old name was Vulturnum. When it fell into the hands of the Samnites, it took the name of Capua. [CAMPANIA.] In the war with Hannibal the Romans formed the siege of Capua, which adhered to the side of Hannibal. When the place was taken by the Romans, the senators were put to death, and the bulk of the citizens sold for slaves. Capua at this time was probably a larger city than Rome. There is an amphitheatre which resembles the Colosseum of Rome in its form. In the outskirts of Santa Maria, and on the roads that branch off from that town to Capua, Caserta Naples, and Nola, there are many ancient tombs, and the whole of this district, taking a diameter of 10 miles, abounds more than any part of Italy with those ancient vases vaguely called 'Etruscan.'

CAPUCHINS. [FRANCISCANS.]

CARA'BIDÆ, a family of coleopterous insects, of the section *Pentamera* of Latreille. This family, named as above by Macleay, is nearly identical with Latreille's section *Grandipalpi* as given in Cuvier's 'Règne Animal.' The distinguishing characters are:—Anterior tibiæ without emargination on the inner side; head narrower than the thorax; eyes rather prominent; palpi with the terminal joints often compressed, large, and somewhat triangular in shape; mandibles simple, moderately long, and rather thick. The species of the carabidæ are usually large, and adorned with brilliant metallic colours.

CA'RABUS, a genus of coleopterous insects, of the family *Carabidæ*. This must not be confounded with the genus Carabus of Linnæus, which, according to many of the modern authors, is divided into several families, and those families each contain numerous genera. The necessity for subdividing the group called Carabus by Linnæus will be seen when it is taken into consideration that there are probably now about 800 species discovered.

The genera *Carabus*, *Tefflus*, *Procerus*, *Procrustes*, and *Calosoma*, contain the largest species of the carnivorous beetles, and together appear to form a natural group. We will therefore here notice the distinguishing characteristics of each, omitting those of Calosoma, which will be found under that head. These genera are usually arranged in succession as follows:—*Tefflus*, *Procerus*, *Procrustes*, *Carabus* and *Calosoma*, and their chief technical characters may be readily seen by the following table:—

1. Anterior tarsi the same (or nearly so) in both sexes.
   - *a.* Labrum entire . . Tefflus.
   - *b.* Labrum bilobate . . Procerus.

2. Anterior tarsi with the three or four basal joints dilated in the males.
   - *a.* Labrum trilobate . . Procrustes
   - *b.* Labrum bilobed . . Carabus.

In Tefflus, Procerus, and Carabus, there is a simple tooth-like process in the emargination of the mentum; whilst in Procrustes this process is broad, and slightly notched at the apex. The terminal joint of the palpi in these genera is nearly triangular, and larger in the males than the females. In Procerus this joint is much larger in proportion than in either Carabus or Procrustes; and in Tefflus it is most developed, and is of an elongate form, slightly convex anteriorly.

For a description of the species comprehended under the above genera, see Stephens's *Illustrations of British Entomology*, and Dejean's *Species Générale des Coleoptères*.

CARACALLA, MARCUS AURE'LIUS ANTONI'NUS BASSIA'NUS, son of Septimius Severus, accompanied Severus in his expedition to Britain, and was with him in the Caledonian war, on which occasion he is said to have conspired against his father. Severus died at Eboracum (York), A.D. 211, leaving his two sons, Bassianus and Geta, his joint successors to the empire. Having concluded peace

with the Caledonians, the two brothers returned to Rome, where Bassianus caused Geta to be murdered. He also put to death all the friends of Geta, and the jurist Papinianus, the friend of his father Severus. In order to obtain money for his extravagance, he deteriorated the coin; and the object of bestowing the Roman citizenship on all freemen of the empire was only to render them all equally subject to taxation. At Rome he built the magnificent thermæ which are known by his name. In an expedition into Germany he fought with the Catti and the Alemanni, and purchased peace by paying them large sums of money. In the following year he went into Dacia against the Getæ, and from thence he proceeded by Thrace into Asia Minor. After visiting Antioch, and founding a colony at Edessa, he went into Egypt, and ordered a massacre of the people of Alexandria on some frivolous pretext. During his invasion of the Parthian territories, a conspiracy was formed against his life by Macrinus. As the emperor was proceeding from Edessa to Carrhæ, he was killed by a soldier, A.D. 217, after a reign of six years and two months. Macrinus was proclaimed emperor by the army. (Dion Cassius, lib. 77, 78; Spartianus, 'Antonin. Caracalla;' and Herodian, lib. iv.)

CARA'CAS, the capital of the Republic of Venezuela, in South America, lies in 10° 30′ 15″ N. lat., and 67° 4′ 45″ W. long., and is about 16 miles from its port, La Guayra. The town is situated on a declivity, is regularly built, and has wide streets crossing each other at right angles. On the south side of the town is the small river Guayra, which receives several streams that rise from the heights on which the town stands, and supply it abundantly with water. In the Plaza Mayor, or principal square, which is 2880 feet above the sea, the market for vegetables, fruit, meat, salted provisions, fish, poultry, game, bread, parrots, monkeys, birds, &c., is held. Towards its eastern extremity, but within the square, is the cathedral, an extensive and solid edifice, which withstood the earthquake of 1812, but was materially damaged by that of 1826. The town is the seat of an archbishop and of the legislature and government of the republic. It has a university, founded in 1778, and a population of 50,000, who carry on a considerable trade in the produce of the neighbouring valleys, which are very fertile, yielding large quantities of indigo, coffee, and the best cocoa in the world. The climate is healthy. By the terrible earthquake of 1812, 12,000 persons are said to have perished amidst the ruins of their houses. The exports from La Guayra consist principally of cocoa, cotton, indigo, coffee, tobacco, hides, and live cattle. (Humboldt; Depons; *Letters from Columbia;* Macgregor's *Statistics.*)

CARACCI, or CARRACCI, LODOVI'CO, AGOSTI'NO, and ANNIBA'LE, three of the first painters of Italy, kinsmen, fellow-students, and fellow-labourers, were natives of Bologna, and founders of the Bolognese School. Lodovico was born in 1555, and was placed at an early age with Prospero Fontana to study painting. After leaving Fontana, he travelled to Venice (where he became acquainted with Tintoretto) and Parma. Returning to Bologna, he found his cousins Agostino and Annibale so well inclined to his profession, that he persuaded their father to leave their education to him. Agostino, who was born in 1557, was very versatile in his pursuits: among other things he had learned engraving from Cornelius Cort, and attained to such excellence, that many of his engravings are only distinguishable from his master's by the superiority of the drawing. His cousin placed him with P. Fontana, and afterwards with Passerotti. He never practised painting however with any constancy, but indulged his ingenuity in various pursuits connected with literature and the liberal arts, working at his easel by fits and starts.

Annibale exhibited a perfect contrast to the phlegmatic calmness of Lodovico and to the accomplished fickleness of Agostino. He laboured in his vocation with an unwearying and enthusiastic devotion, and a singleness of purpose which has never been excelled, perhaps not equalled. He disliked all study but that of painting, and more than once burst out into complaints against the school-like refinements and the slow proceedings of his kinsmen in their pursuit of excellence. The three opened an academy in Lodovico's *studio*, which became famous for the illustrious pupils whom it sent forth.

The works of the three kinsmen are principally in Bologna and Rome. The Farnese Gallery is considered the greatest work of Annibale. The Louvre contains the 'St. John the Baptist,' by Lodovico, and the 'Communion of St. Jerome,' by Agostino, which are respectively reckoned their best works in oil.

Annibale died in 1609. He was buried, according to his own desire, by the side of Raphael. Agostino died in 1602; Lodovico *lived* until 1619.

CARACCIOLI. [NELSON, LORD.]

CARA'CTACUS. [BRITANNIA.]

CARADOC FORMATION, the uppermost of the two great divisions of the lower Silurian strata of Murchison. It is not well and clearly seen except in Shropshire, the Abberley and Malvern Hills, Woolhope, May Hill, and other points on the eastern borders of Wales.

CARAGA'NA, a genus of papilionaceous yellow-flowered shrubs, one of which, the *Caragana gerardiana*, is one of the plants called *Tartarian Furze* by travellers.

CARA'GLIO, GIANGIA'COMO, a very celebrated old copper-plate, medal, and gem engraver, born about the commencement of the 16th century. He was the pupil of Marcantonio at Rome, and is one of the best of the early Italian engravers. He died about 1570.

CARAMANIA, or KARAMANIA, an Eyalet in the interior of Asia Minor [ANATOLIA], extending from about 37° to 39° 9′ N. lat., and between 30° and 36° E. long. It is bounded S. and E. by the Taurus range, and N. by the Kizil-Irmak, and the range of mountains which crosses the centre of Asia Minor to the north of Lake Tuz, the ancient Tatta Palus. It is divided into 8 livas, or districts, generally named from the chief towns, the principal of which are Karaman

or Larenda, Ak-shehr, Ak-serai, Kir-shehr, Kaisarieh, the ancient CÆSAREA, Nigdeh, Bei-shehr, and Isbarta. The capital of the Eyalet is Konieh, the ancient Iconium.

CA'RANX, a genus of fishes of the order *Acanthopterygii* and family *Scomberidæ*, distinguished chiefly by the lateral line of the body being furnished with a series of scaly plates; these plates are horizontally keeled, especially on the posterior half of the body, and frequently terminate in a spine or angular projection directed backwards. The rest of the body is covered with small scales. Two distinct dorsal fins; free spines before the anal fin; teeth exceedingly minute; 7 branchiostegous rays.

Several species inhabit the seas of Europe. They have a general resemblance to the mackarel in form and taste, one species only, the Scad or Horse Mackarel, *Caranx trachúrus*, is found along the shores of our island, vast shoals sometimes making their appearance during the spring and summer months. This species occurs also in the Mediterranean. Cuvier enumerates the *C. punctatus*, the *C. Rotleri*, *C. dentus*, *C. carangus*, and *C. guaraterebra*, as examples of this genus.

(Cuvier's *Règne animal*, vol. ii. p. 207; Yarrell's *British Fishes*, vol. i.)

CARAT, KARAT. The karatium (κεράτιον?) was originally the twenty-fourth part of the *marc*, or half-pound among the French, from whom the word came: so that three carats made an ounce. The carat was a small weight used for gold and jewels, and varied greatly in different countries. At last however it went out of use, except only in the sense in which it still exists, namely, that a carat means the twenty-fourth part of any weight of gold or gold alloy. If such a weight be all gold, it is said to be twenty-four carats fine; if one-third only be gold, it is said to be eight carats fine.

CARAUSIUS. [BRITANNIA.]

CARAVA'GGIO, POLIDO'RO DA, a celebrated Italian painter, born at Caravaggio about 1495; his family name was CALDARA. When he was eighteen years of age he was a labourer, and was employed about 1512 in the Vatican, when Raphael was painting the loggie and stanze there. He made some attempts at design himself, which had sufficient merit to induce Maturino of Florence, one of the assistants employed, to undertake to teach him to draw, for which he soon displayed extraordinary ability. A strong mutual attachment grew up, and Maturino employed Polidoro to assist him in his work. Their joint labour soon attracted the notice and admiration of Raphael. These works were in fresco and in light and shade, and consist mostly of friezes and other decorations in imitation of bronze or marble, applicable for buildings, interiors or exteriors. Their figures, of which they were not sparing, were drawn in a pure antique style, and were not inferior in that respect to the works of any modern master. They painted also original works from sacred and modern story. Of all these works however scarcely a vestige remains, but some are in a measure preserved by the prints of Cherubino Alberti, P. S. Bartoli, and Galestruzzi.

The sack of Rome, by the soldiers of Bourbon in 1527, put an end to the joint labours of Polidoro and Maturino. Polidoro went to Naples, and thence to Messina. He dwelt several years in Messina in high esteem, and executed many good works, not in his early style of chiariscuri, but in colours; and some of them were for altar-pieces: Vasari mentions a Christ led to Calvary amidst a crowd of people, as a masterpiece. In 1543 he made up his mind to return to Rome, having amassed a considerable sum of money, but was murdered by his servant on the night before his intended departure. Some of the pictures which he painted at Messina are in the Gallery of Naples.

(Vasari, *Vite de' Pittori*, &c.; Gandellini, *Notizie Istoriche*, &c.; Lanzi, *Storia Pittorica*.)

CARAVA'GGIO, MICHELANGELO AMERIGHI DA, was born at Caravaggio, about the year 1569. Caravaggio derived his first love of the art, together with such knowledge as he could pick up, in the service of certain artists at Milan as a colour-grinder. He afterwards went to Venice, where he studied the works of Giorgione with great success, and some of his pictures in the style of that period are much esteemed; he thence went to Rome, where he made a resolution to study no more from artificial models, but to adhere simply to nature, such as he found it in the streets and alleys of Rome, and assumed a manner characterised by dark and gloomy shades, illumined by a scanty twilight. Having quarrelled with and killed one of his companions, he fled first to Naples and then to Malta. Here he became engaged in another quarrel, and was thrown into prison, but escaped to Sicily, where he was attacked by armed men sent in pursuit of him, and was grievously wounded and disfigured. In the meantime a pardon had been obtained for him at Rome, whither he returned; but on landing, being arrested by mistake, the excitement, added to the fear of the loss of his property which he had left on board the vessel, brought on a violent fever, and on reaching the Porta Ercole he sat down and expired. He was then forty years of age.

His principal works are a 'St. Sebastian,' in the Capitol at Rome, a 'Supper at Emmaus,' in the Borghese Palace, and the 'Entombment of Christ,' now in the Louvre, which in its original place in the Chiesa Nuova was considered to eclipse the rival altar-pieces by Baroccio, Guido, and Rubens.

CARAVAN, a travelling body of merchants or pilgrims, who join company for safety and convenience. The term, which is of Persian origin, is confined to journeys in the East, and applies more particularly to those made in Arabia, Nubia, Syria, Persia, and Asia Minor; but the practice obtains, though mostly on a smaller scale, in many other countries where the roads are insecure, and where deserts and desolate tracts of land are to be crossed.

In the East the caravans have a commercial or a religious character, and very frequently both; the greatest of them all, or those which proceed annually to the holy city of Mecca, have always trade as well as prayers in view.

Besides these large annual caravans, others on

a smaller scale are constantly occurring in the East, where merchants and travellers going the same road wait for one another until they can form a caravan, when they generally appoint one of their voluntary association to regulate the order of march. But the caravan trade is not limited to Southern Asia. The great trade between China and Russia is a caravan trade. The road runs from Peking to Kiachta, the great border-market for the barter of Chinese and European articles: the journey is from 70 to 90 days. Other similar lines of route exist in Russia and the countries to the east of the Caspian Sea.

CARAWAYS, the ripe fruit of *Carum Carvi*. The seeds, as they are vulgarly called, which are the furrowed halves of the ripe fruit, have a peculiar aromatic flavour, and are used as an agreeable carminative by confectioners; the roots themselves are eaten in the north of Europe.

Caraways are used in medicine as a carminative. The chief English cultivation of the plant is in Essex and Suffolk, upon old grass land broken up for the purpose. As it is a biennial, it is generally sown with another plant of the same tribe called coriander; and sometimes a crop of teazles (*Cardwus Fullónum*) is raised on the same land. The three give a very valuable return during two or three years.

CARBAZOTIC ACID, which has also been called *nitropicric* acid, results from the action of nitric acid upon a great number of vegetable and animal substances. It crystallises in equilateral triangular laminæ. It reddens litmus paper, and has a very bitter taste, and on this account it was long called *bitter of indigo*. When heated, it fuses and sublimes without decomposing. If it be rapidly heated in the air, it burns without explosion, leaving charcoal. It is composed, according to Liebig, of C^{12}, N^{6}, O^{15}; and its salts are called *Carbazotates* or *Nitropicrates*.

CARBINE, or CARABINE. [Arms.]

CARBO, C. P. [Marius; Pompeius.]

CARBON, a non-metallic elementary solid body, which is widely diffused throughout nature. The purest and at the same time the rarest form in which it occurs is that of the diamond [Diamond]; the more common states in which it is met with are those of anthracite, graphite, and coal; but in these cases it is not free from admixture. Another well-known form of carbon, but still impure, is charcoal. Under Anthracite, Coal, and Plumbago, various properties of Carbon are described. Carbon is the chief element in three groups of substances:—the mineral forms, such as diamond, anthracite, &c.; the carbonates; and the vegetable series, as coal, asphaltum, peat, amber, &c.

Charcoal consists mainly of carbon procured from the decomposition of wood by burning. This operation is generally conducted in pits made in the ground; sometimes however it is carried on in iron cylinders. Wood is essentially composed of carbon, oxygen, and hydrogen. By the action of the heat it is decomposed, the oxygen and hydrogen are expelled, and uniting in certain proportions form water; and also with carbon various gaseous and other compounds are formed. Among the latter are acetic acid, sometimes called pyroligneous acid, and a peculiar inflammable fluid known by the name of pyroxilic spirit, and tar.

Charcoal has the following properties. It is black, lighter than water, and full of pores, occasioned by the expulsion of the bodies volatilised. Charcoal, from whatever source procured, is absolutely infusible by any degree of heat however great; neither that of a mirror, the oxhydrogen blow-pipe, nor the voltaic discharge, being sufficient to produce fusion. In its common state it is one of the worst conductors of heat known, but its power is increased after being strongly heated. Charcoal is a conductor of electricity, which is so far from being the case with the diamond, that it may be rendered electrical by friction.

Charcoal is tasteless, inodorous, and insoluble in water. It possesses the property of destroying colouring matter, especially the charcoal procured by burning bones, which is usually called *animal charcoal*. It is largely used for this purpose in sugar refining. It has the power of condensing gaseous bodies to a greater degree than most or perhaps any other substances: graphite, on account of its compactness, does not possess this quality. Charcoal is highly combustible; it burns in the air when strongly heated, though not very rapidly. During this combustion carbonic acid is formed by the union of the oxygen of the air with carbon.

It has been mentioned that charcoal is not pure carbon, and when a quantity is burnt there always remains a portion of ashes containing a considerable quantity of carbonate of potash and some other alkaline and earthy salts, which have been taken up from the soil in which the tree grew that furnished the charcoal.

Charcoal is used not merely for combustion, but also for the important purpose of making gunpowder. It is also applied to other various well-known uses. Carbon unites with all the elementary gases to form highly curious and interesting bodies, which are described under Carbonic Acid, &c. The Atomic number of carbon is 6.13.

Carbon, in an impure state, or charcoal, is employed medicinally both internally and externally. Its power of absorbing gases and moisture renders it useful in some cases, while in other cases it seems to act by some power exerted on the vital energies of the system. Charcoal, especially animal charcoal, possesses the power of destroying the colour, smell, and taste of a great variety of vegetable and animal substances; particularly of mucilages and oils, and of matters in which *extractive* abounds. Meat and game, too far decomposed, may be restored to a condition fit for use by the employment of finely powdered charcoal, assisted by sulphuric acid. Water also may be restored from a tainted state by filtering it through charcoal. Charcoal, both from its antiseptic and vital properties, is useful in many forms of fever, especially the bilious, remittent, and intermittent fevers of warm climates, given during the interval of the vomiting of the black matter; and in yellow and typhoid fevers. It is also serviceable in dyspepsia accompanied with fetid breath and eructations. It is sometimes of service in constipation, dysentery, as an application to foul ulcers, as a stpytic, and in many other things.

CARBONATE, a salt composed of carbonic acid and a base. The chief varieties are described under their alkaline, earthy, and metallic bases.

CARBONIC ACID. There are three compounds of carbon and oxygen, *Carbonic Oxide*, $C^1 O^1$; *Carbonic Acid*, $C^1 O^2$; and *Oxalic Acid*, $C^2 O^3$. Carbonic acid was supposed by Van Helmont to be a peculiar matter; Hales thought it was deteriorated air; Black called it 'fixed air;' Bergmann 'aerial acid;' but Lavoisier discovered its true character.

Carbonic acid exists largely in nature. It is in comparatively small quantity in the gaseous state in the atmosphere; it is in solution in most spring water, and in some called mineral waters to a considerable degree; but it is in solid combination that it is found in the largest quantity, forming nearly 44.100ths of all limestones and marbles, besides occurring in less quantity united with other earths and metallic oxides. Carbon and oxygen do not appear to combine, or, if at all, very slowly at common temperatures, by direct action; but certain compounds which contain carbon, when undergoing the process of fermentation, yield a large quantity of carbonic acid. [FERMENTATION.] It is also produced during the process of respiration; by animal and vegetable putrefaction; and by combustion, whether of oil, wax, tallow, vegetable matter, or coal. In its uncombined state, carbonic acid is usually a gas, of which 100 cubic inches weigh 47.3 grains. Its specific gravity is 1.519.

Carbonic acid gas is colourless and transparent, and therefore invisible; it has an acid and slightly astringent taste; it reddens litmus paper, but the blue colour returns as the acid volatilises. It extinguishes burning bodies, and is fatal to animals. On account of its great density, it diffuses slowly in the air, and hence it is apt to remain long in fermenting vats, old wells, &c., and has frequently produced fatal effects upon persons descending into them. Atmospheric air may however contain 1–20th of its volume of this gas, and be respired without becoming hurtful. On account of its great weight, it may be poured from vessel to vessel, as is shown by its extinguishing a taper repeatedly. Though gaseous at common temperatures, Faraday showed that carbonic acid could be brought to the liquid state by intense cold and pressure: it is then a limpid colourless fluid, which M. Thilorier rendered even solid, in which state it is one of the most powerful refrigerating substances known. Carbonic acid is an ingredient in many mineral waters, to which it imparts effervescing qualities.

Carbonic Acid Gas acts upon the human system as a powerful sedative poison. Unless largely diluted with atmospheric air, it cannot be breathed, as it stimulates the glottis, or entrance to the windpipe, to contraction, which causes the person exposed to this gas to die of suffocation. But even when so far diluted as to be able to pass the glottis, and enter the lungs, it acts as a poison; and also when brought in contact with the skin (pure atmospheric air being breathed at the same time), or with the mucous membrane of the stomach. A variable quantity of carbonic acid gas exists at all times in the air, as essential to the respiration and the life of plants; but any considerable increase of this quantity is deleterious, and destructive to the life both of animals and vegetables, though plants will flourish in an atmosphere containing 9 or 10 per cent. of carbonic acid gas, provided they are exposed to the direct solar light, for this quantity is poisonous to them in the shade. (Saussure.) The cause of the absence of vegetation in the celebrated poison valley of Java is the existence of a subterranean source of carbonic acid gas, and not the shade of the upas-tree, as is popularly believed.

Carbonic acid gas is evolved from the combustion of fuel, and during the process of fermentation. And it is apt to be formed and accumulate in mines, particularly coal-mines, where it is termed *choke-damp*, and in old draw-wells. It also is formed or extricated by the respiration of animals, and becomes the source of disease and death when many human beings are crowded together in close ill-ventilated rooms. Hence the necessity of ventilation.

When, from breathing carbonic acid, an individual has fallen into a state of stupor or insensibility, he is to be removed as speedily as possible into the pure fresh air, cold water should be dashed upon the face, ammonia may be rubbed upon the chest, and, if conveniences exist, he may be caused to breathe oxygen gas. Blood, but in moderate quantity, should be attempted to be procured from the arm or jugular vein, and efforts to effect this may be persevered in for hours with ultimate success. Carbonic acid gas has also been employed medicinally, but it is not a remedy of much power.

Recent attempts have been made to show, first, that carbon may be converted into silicon; second, that carbon is a compound produced by plants during their growth; either of which would disturb the usual opinion as to the composition of carbonic acid: but both theories have failed in proof.

CARBONIC OXIDE, a gas composed of $C^1 O^1$, may be readily prepared in many different ways. It is colourless and insipid; it is but slightly soluble by water; it is fatal to animals, and extinguishes a taper if immersed in it; but when it meets with oxygen gas it burns, and is converted, by combining with it, into carbonic acid. It has no action upon blue vegetable colours; and, unlike carbonic acid also, it does not occasion any precipitation in lime water: 100 cubic inches weigh 30.1 grains. Its specific gravity is 0.971.

CARBONIFEROUS SYSTEM, the great group of strata which includes nearly all the valuable coal yet discovered. It consists of—the coal formation, the millstone-grit group, the mountain limestone formation, and the limestone-shale group. The millstone-grit group and the limestone-shale group are the least constant in range and character. The limestone-shale graduates in South Wales to Devonian strata, and in Ireland constitutes the yellow sand-stone series of the northern counties. Most of the coal of Ireland belongs to the millstone-grit group.

CARBURET, a compound of carbon with nitrogen, metals, &c.

CARCASS, a shell, or hollow ball of iron, perforated in three places at equal distances from each other within one hemisphere of the shell, and filled with a composition which burns with violence during eight or ten minutes. When discharged from a mortar or howitzer, the flames issuing from the perforations set fire to any building on which the carcass may happen to fall.

For the dimensions of this kind of shell, and the nature of the composition, see Spearman's *British Gunner*.

CARCASSONNE. [AUDE.]

CARDAMINE, a genus of plants belonging to the natural order Cruciferæ. The species, which are numerous, are usually smooth herbs, with stalked, entire, lobed, or pinnately cut leaves, and racemes of white or red flowers. *C. pratensis*, Cuckoo-flower, Bitter-Cress, common Lady-Smock, is a plant with large lilac-coloured flowers, and is exceedingly abundant in some parts of the country. It has a bitter taste, hence its name Bitter-Cress. It is generally in blossom when the cuckoo returns to this country, and at that period covers the fields as though linen was bleaching: these circumstances explain its other common English names. It is a native of Europe, Asia, and America, and is abundant throughout Great Britain. Babington describes four other species of Cardamine as natives of Great Britain.

The light purple flowers of *C. pratensis* yield a bitter extractive and a volatile oil, which possess slight medicinal properties, and are said to be useful in hysteria, chorea, epilepsy, and some other diseases. It is said to be a valuable dietetical agent in the treatment of sea-scurvy.

CARDAMOMS, the aromatic capsules of different species of AMOMUM. The sorts known in the shops of Europe are the large, the middle-sized, and small, the clustered, or Malabar cardamoms, and the Grains of Paradise, or Mellagetta or Malagueta pepper. Large cardamoms are supposed to be the seeds of *Amomum angustifolium*, a Madagascar plant, with a remarkably strong but pleasant and aromatic odour. Middle-sized and small cardamoms are believed by Fée to be both produced by *Amomum cardamomum*, a native of Sumatra, and other islands to the eastward of the Bay of Bengal. Malabar cardamoms, which are the best sort, and those in the most extensive use, are produced by *Amomum repens*, the *Elettaria* of Maton, and the *Alpinia cardamomum* of Roxburgh. Grains of Paradise are the fruit of *Amomum Granum Paradisi*, a native of Ceylon and Madagascar. Its qualities are similar to those of ordinary cardamoms, but inferior.

CARDAN, JEROME, was born at Pavia, in the autumn of 1501: his father was a physician and lawyer at Milan. It is presumed that he was illegitimate. At twenty years of age he studied in the university of Pavia; at twenty-two he taught Euclid in the same place. He went to Padua in 1524, and was there received doctor in medicine in 1525. He was successively professor of mathematics or of medicine at Milan, Pavia, and Bologna, and was imprisoned in the latter place (but for what offence is not stated) in 1570. Having obtained his liberty, he left Bologna in September 1571, and went to Rome, where he was admitted into the college of physicians, and received a pension from Pope Pius V. He died after Oct. 1, 1576, and probably not long after, but when is not well known. It is to his own account of himself that we are indebted for the quantity of description and speculation relative to his personal character which is found in all biographies. There may be in this production a touch of the insanity which delights in accusing itself of crimes, or in exaggerating its foibles. As it is, and taking the character of Cardan as he has given it himself, we see a man—of unequalled self-conceit, as when he says his book of logic (written in seven days, but hardly to be understood by any one else in a year) has not a letter either of omission or superfluity; and that he is born to deliver the world from a multitude of errors: of little benevolence, as when he avows that his greatest delight in conversation is to say things which he knows will be disagreeable to his hearers: of no veracity, as witness his assertion that he acquired a perfect knowledge of Greek, Latin, French, and Spanish, in twenty-four hours from an edition of Apuleius: of violent temper, instanced by his striking one in the face with a dagger whom he discovered to be cheating him at play: and of little honesty, as evidenced by his justification of his refusal to return a pledge, namely that it was deposited in presence of no witness. He was also a superstitious free-thinker; attached to his religion, but disposed to treat it in his own way, to an extent which made a worthy divine, who claimed, we suppose, to be the adjutant-general of heretics, call him the 'chief of the hidden Atheists of the second class.' His refusal to accept an advantageous settlement in Denmark, on condition of apostatising, ought to establish his right to some principle. His four gifts—1, the power of throwing his soul out of his body (for his words can mean nothing less); 2, his faculty of seeing whatever he pleased *with his eyes*, 'oculis, non vi mentis;' 3, his dreams, which uniformly and on every occasion foretold what was to happen to him, and, 4, his finger nails, which did the same thing—to say nothing of his astrology, his good dæmon, &c. &c.—establish his claim to be the chief of the visionaries 'of the first class.'

As a physician, his reputation extended through Europe, both as a practitioner and a writer. In 1552 he went to Scotland to the assistance of Hamilton, archbishop of St. Andrew's, whom he cured. In the memoirs of Melvil the fact is stated, and Cardan is mentioned by name, with the addition that he was an Italian magician. His medical writings have procured him no lasting reputation: those who follow such pursuits seem to have tacitly consented that Cardan shall be left to the mathematicians; and it is to his discoveries in algebra that he must be considered as entitled to a prominent place in biography. De Thou, who knew him personally, records that he always dressed in a different manner from the rest of the world, and says that it was commonly believed his

end arose from starvation, voluntarily undergone, that he might not outlive the time which he had predicted for his own death. This story has been frequently copied, as if the fact had been positively asserted by the historian, whereas he only speaks of a rumour.

The 'Ars Magna,' published in 1545, contains the extensions which Cardan made in the solution of equations. We shall not here enter into the celebrated dispute between Cardan and Tartaglia, further than to specify the part taken by the former. When he was informed of the solution of cubic equations, which Tartaglia had discovered, he applied to the latter, March 25, 1539, and requested he would communicate his method, which Tartaglia declined, intending to reserve the same for the work which he published afterwards in 1554. Cardan then swore, 'upon the Holy Gospels and the faith of a gentleman,' that he would not only not divulge the secret, but would engage to write it in such a cipher as no one should be able to read, in case of his death. Tartaglia, upon this assurance, communicated his method. This detail rests upon the authority of Tartaglia himself ('Quesiti et Inventioni,' folio 120), but is amply confirmed by Cardan's subsequent letters, and was never denied by him. Notwithstanding his word thus pledged, Cardan published these methods in his *Ars Magna* (1545), giving the credit of them, indeed, to Tartaglia, but concealing the promise he had made.

The communication made to Cardan amounted to the solution, without demonstration, of $x^3 + ax + b = 0$, in the cases where a and b are, one or both, negative. Cardan himself supplied the demonstrations, showed how to reduce all equations of the third degree to the preceding form, and how to extract the cube root of the binomial surd quantities which the well-known solution involves. He was the first who considered negative roots, and comprehended the nature of the connection between them and the positive roots of other equations; and he even gave the first idea of a method of approximation.

There is in the second volume of Dr. Hutton's Tracts an account of the 'Ars Magna,' the most complete of any which we know in English.

The works of Cardan were collected under the title of 'Hieronymi Cardani Opera omnia, curâ Caroli Sponii,' Lyon, 1663, in ten volumes folio. He states of himself that he had printed 126 books, had written 40 more, and that 60 authors had cited him.

CARDI, LUDOVICO. [CIGOLI.]

CARDIFF. [GLAMORGANSHIRE.]

CARDIGAN, a seaport, and the county town of Cardiganshire, is situated on the northern bank of the river Teify, about three miles from its mouth, 234 miles W.N.W. from London, by the road. It is called *Aberteify* by the Welsh. Cardigan rose into a town about the time of the Norman Conquest, and the castle is said to have been built by Gilbert de Clare about 1160, of which two towers and a wall yet remain in a commanding situation, above the river, which is here crossed by a bridge. The streets are narrow, except one, which is the principal thoroughfare of the town. The county-hall was built in 1764, the county-gaol in 1793. The tower at the west end of the church is more modern than the rest of the structure. The population of the town of Cardigan in 1841 was 2528. The Cardigan parliamentary district of boroughs returns one member to the House of Commons, and comprises the contributory boroughs of Aberystwith, Adpar, Cardigan, and Lampeter. The harbour is obstructed by a bar, but ships of 300 to 400 tons can come up to the bridge at spring tides. The general trade however is confined to vessels of from 20 to 100 tons. The number of vessels registered Jan. 1, 1847, was 259 (13,800 tons). The imports are chiefly coals, limestone, and deals; the exports, oats, butter, and slates.

CARDIGANSHIRE, a maritime county of South Wales, bounded N. by the counties of Merioneth and Montgomery, E. by Radnorshire and Brecknockshire, S. by Pembrokeshire and Carmarthenshire, and W. by the Irish Sea. Its greatest length from N.E. to S.W. is about 46 miles, and greatest breadth from E. to W. near 35 miles. The length of sea-coast is about 42 miles. The area is 675 square miles. In 1841 the population was 68,766.

The south-western district of Cardiganshire is level, and also the neighbourhood of Aberayron, and several other tracts near the coast; in general however the surface is mountainous, especially in the northern and eastern parts. The highest lands are rugged, bleak, and barren; the lower lands afford pasturage. The uninclosed portion of the country is very extensive. There are four mountains above 1000 feet high each: Plinlimmon has an elevation of 2463 feet. The rivers of the county are the Teify, Towy, Ystwith, Claerwen, Rhydol, Arth, Ayron, Wirrai, and Lery. The county contains a few good turnpike roads, but neither a canal nor a railway. At a few miles north-east of Tregaron are situated several small mountain lakes, which are abundantly stored with fish. The chief are Llyn Teify, Llyn Gynon, Llyn Egnant, and Llyn-ruddon-vawr. The climate of this county is in winter very rough, the winds are violent, and the snow frequently remains on the mountains till late in the spring; in summer however and in autumn there is a light, dry, wholesome air, which is extremely pleasant. The geological formation is chiefly a hard slate of the transition series.

The soil is for the most part unfavourable to cultivation; in the mountainous districts it is thin and cold, and yields a small produce of oats, barley, and potatoes; rye is also sown in small quantities. Wheat and barley are grown near the sea-shore. With most of the farms (from 40 to 150 acres each) is let a right of pasturage on the hills. The system of husbandry is for the most part rude and inefficient. The prevailing breeds of cattle, horses, and sheep, are hardy; the management of the dairy is much attended to.

The mines, which in former times were both extensively and profitably worked, are now of comparatively small value. At Talybont the ore is nearly exhausted; at Cwmystwith the lead mines are not productive, and the copper ores

have ceased altogether to be worked. There are several slate quarries in the neighbourhood of Aberystwith, but the slate is not of good quality. As there is no coal in the county, peat, which is abundant, is the fuel chiefly consumed. The manufactures of this district are unimportant, being confined to the weaving of a small quantity of flannel, coarse woollen stuffs, and gloves. Oats, butter, and slates are exported. Coal, culm, limestone, and deals are the chief imports. The fisheries are of small value.

Cardiganshire is wholly in the province of Canterbury and diocese of St. David's. One member is returned to parliament for the county, another for the contributory boroughs. The quarter-sessions are held at Lampeter, Cardigan, and Aberystwith.

Cardiganshire is divided into five hundreds, in one of which is included Cardigan Island, an extra-parochial tract of pasturage of about 40 acres, situated at a short distance from the main land, at the mouth of the Teify.

The only towns of Cardiganshire which require notice are the following:—

ABERYSTWITH.

CARDIGAN.

Lampeter is contributory to the Cardigan district of boroughs, and the entire parish in 1841 contained 1507 inhabitants. In 1822 a college for the education of the Welsh clergy was founded at Lampeter. This institution is of great public utility. The students reside within the college, which is well conducted by a principal, a vice-principal, and professors of Greek, Hebrew, Welsh, divinity, &c. The bishop of the diocese, who is visitor, ordains no one who has not graduated at Oxford, Cambridge, or Lampeter.

Tregaron contained in 1841 a population of 692.

The name Cardigan is derived from 'Caredigion,' which signifies the territory of Caredig, the first king of this district, who was succeeded by a long line of princes of whom little is known until the reign of Rodri Mawr, or Roderick the Great, who in the year 843 became by inheritance and marriage the king of all Wales. After his time, Cardigan was alternately a lordship under the princes of South Wales, and an independent possession. Between 987 and 1092 Cardigan was in turn attacked by Saxons, Danes, North Welsh, and South Welsh leaders, and was a scene of repeated conflicts. From 1092 to 1238 the Welsh of Cardigan were almost constantly engaged with the Normans. During these conflicts many castles were built in the county, and Llewellyn, in 1238, tried to make a bold stand against the Normans; but, before the end of the same century, the whole of Wales became permanently annexed to England.

Cardiganshire abounds with antiquities. There are, besides many Druidical remains, a Roman station at Llanio, and a Roman road traversing the county in a north and south direction from that place. Remains of castles are either standing, or it is evident that such fortifications have existed, at Cardigan, Aberystwith, Lampeter, Ystradmeyric, Cilcennin, Llanrysted, Dinerth, Moyddgn, Abereinon, Penwedic, Castell Gwalter, Castell Cadwyan, Hên-Castell, Castell Flemis, &c. There were also religious houses at Cardigan, Lampeter, Llanrysted, Llandewi-Brevi, and Strata Florida.

CA'RDINAL (Italian, *Cardinale*), the highest dignity in the Roman church and court, next to the pope. The cardinals are the electors of the pope and his councillors. The Latin word *cardinalis* is used by Vitruvius in his description of doors, and the word is derived from the Latin *cardo*, a hinge. It was applied by the Latin grammarians to the cardinal numbers, as we now call them, *one*, *two*, and so on. We also speak of the cardinal virtues, and the cardinal points, North, East, South, and West. The Roman cardinals, says Richelet, are so called because they are the hinges or points which support the church ('Dictionnaire').

About the beginning of the twelfth century, the popes bestowed the rank of cardinal priest or deacon on any individual of the clergy or even laity that they thought proper, whether Roman or foreign, and gave to each the title of some particular church of Rome, without any obligatory service being attached to it. Thus they made the cardinals a separate body elected for life; and the officiating priests of the Roman parishes were by degrees deprived of the title of cardinals, which they had hitherto had. Sixtus V., in 1586, fixed the number of cardinals at seventy. All the cardinals, both priests and deacons, bear the title of a church of the city of Rome. Several of the cardinal priests are bishops of some particular diocese at the same time; still they bear the title of the particular church of Rome under which they were made cardinals. The body of the cardinals is styled the Sacred College. The number of seventy is seldom complete. Most of the cardinals who reside at Rome either enjoy ecclesiastical benefices or are employed in the administration, either spiritual or temporal; others belong to wealthy families, and provide for their own support; and those who have not the same means receive an allowance from the Apostolic Chamber, or Papal Treasury, of 100 dollars monthly. They generally dress in a suit of black, in the garb of clergymen, but with red stockings, and a hat bordered with red. On public occasions their costume is splendid. The pope often employs cardinals as his ambassadors to foreign courts, and the individual thus employed is styled Legate *a Latere*.

CARDINAL POINTS. [COMPASS.]

CARDI'TIS. [HEART, DISEASES OF.] Carditis, or inflammation of the heart, is a disease oftener observed in the horse than in any other domesticated animal. The pulse is quickened to a considerable degree, and is also peculiarly bounding and violent. The remedy is simple, and generally effectual. The horse should be bled until the action of the heart is materially subdued, and the bleeding should be repeated if the bounding pulse threatens to return. A strong dose of physic should be given, and digitalis administered in large and frequent doses.

CARDOON, a kind of artichoke, the *Cynara*

*carduncul*us of botanists, a Spanish plant, the thick fleshy stalks and ribs of whose leaves are blanched and eaten as an esculent vegetable. In this country they are not much esteemed, but they form an important object in the Paris market. They are cultivated somewhat in the manner of celery. The seeds are sown in a hot-bed, and, when the plants that they produce have become well established after two or three successive pottings, they are finally planted from three to four feet apart. When they are half grown, in August, either the stems are earthed up, or they are blanched by having hay-bands turned round them. They are fit for the kitchen by the middle of November.

CARDS, CARD-MAKING MACHINE, an arrangement of wires used in the manner explained in COTTON MANUFACTURE, for disentangling the fibres of cotton preparatory to spinning. These cards are now made by a very beautiful machine. The wires are inserted in rows in strips of leather; and, by various movements of the machine, the strips of leather are pierced with *holes*; the wire is unwound from a coil, straightened, and cut off to the proper lengths; each wire is bent to a definite form, and then driven into the hole. One steam-engine can set 100 of these machines at work at once; and each machine can form and fix 400 or 500 teeth in a minute.

CARDU'CCIO, the name of two very able Florentine painters, brothers, who settled and chiefly resided in Spain, where, agreeably to Spanish orthography, they wrote their name *Carducho*. Bartolomeo, the elder, was born in 1560. Vincenzio, the younger, was born in 1568. Bartolomeo was painter, sculptor, and architect. Both brothers went to Spain in 1585, where they attained great distinction in the service of the kings Philip II., III., and IV. Bartolomeo was equally excellent in fresco and in oil. There is a Deposition from the Cross by him in a chapel of San Felipe el Real at Madrid, which Cumberland says may well be taken for one of Raphael's. His principal works were the frescoes he painted in the Escurial; he painted also works at Segovia, Valladolid, and Miraflores. He died at Madrid in 1608, having served the Philips II. and III. for twenty-three years. Vincenzio was the scholar of his brother, and succeeded him as painter to Philip III. in 1609. He died in 1636. His greatest work is the series of paintings from the life of Saint Bruno and other saints, in the Carthusian Convent of Paular, commenced in 1626 and finished in 1630. (Cean Bermudez, *Diccionario Historico*, &c.; Cumberland, *Anecdotes of Eminent Painters in Spain*.)

CARDUUS. [THISTLE.]

CARENTAN. [MANCHE.]

CAREW, THOMAS, born in 1589, of a good family in Gloucestershire, was educated at Oxford, and attached himself to the court of Charles I., at which he held several easy offices. He died in 1639, leaving a volume of small poems (1640, 8vo.), besides scattered pieces never yet wholly collected, and a masque, 'Cœlum Britannicum,' 4to., 1634. Carew's poems are light and airy effusions, but their merit in their own kind is great.

CAREX, a genus of plants belonging to the natural order *Cyperaceæ*. The species for the most part are inconspicuous and unattractive plants. They are however exceedingly numerous. Lindley, in Loudon's 'Encyclopædia of Plants,' describes one hundred and five species, and this is probably not more than half that are now known. Babington describes sixty-six species as natives of Great Britain, being the largest number of species of any genus of phænogamous plants in this country. Koch, in the 'Flora Germanica,' describes one hundred and three species as natives of Germany and Switzerland. Although so numerous, they serve directly few of the purposes of man or the higher animals. Their leaves are tough and hard, so that none of them are eaten by cattle except in cases of great necessity. They are for the most part inhabitants of wet and swampy grounds, in bogs, fens, and marshes, in the temperate and northern parts of the world. In the hop-grounds of Great Britain the leaves of some of the species are used for tying the bines of the hops to the poles. In Italy they are used for placing between the staves of wine-casks, are woven over Florence flasks, and occasionally employed for making chair-bottoms. The leaves of the *Carex sylvatica*, according to Linnæus, are combed and dressed, and used as a warm lining for gloves and shoes; and, thus protected, the Laplanders seldom suffer from being frost-bitten.

CAREY, HENRY, was a musician in London, and composed both the words and the music of several songs. One of these was the popular song of 'Sally in our Alley.' He wrote several farces and musical pieces for the stage; among which were 'Chrononhotonthologos,' 1734, and 'The Dragon of Wantley,' 1737. In a fit of despondency, he put an end to his own existence in 1743.

ÇARIAMA, or SARIAMA, the name by which a singular bird, the *Dichólophus cristatus*, of Illiger (*Palamedea cristata*, Gmelin), is known to the Portuguese colonists of Brazil; it is called *Saria* by the Guaranis of Paraguay, and *Seriema* or *Ceriema* by the natives of Brazil.

The Çariama is placed by most zoologists in the grallatorial order, between the Screamers (*Palamedea*) and the Trumpeter (*Psophia*). Its manners in some respects remind us of those of the Secretary Bird of Africa (*Gypogéranus*), with which it has no affinity. Its food consists of lizards and other reptiles, insects, and molluscous animals.

The Çariama inhabits the great solitary mountain plains surrounded by forests which extend over so large a portion of Brazil, where its sonorous voice often breaks the silence of the desert. It occurs, but more rarely, in Paraguay.

An inhabitant of the vast solitudes that form its wide-spreading home, this bird, raised on its stilt-like legs, stalks slowly about, its eyes being ever on the watch to mark the presence of the yet distant enemy. It runs with great rapidity, but it flies with difficulty; hence it is to its speed that it trusts for safety. Those who have had the best opportunities of observing these birds in their native wilds state that the hunters cannot obtain them without considerable labour. As soon as the bird perceives itself pursued, it sets off with

amazing velocity; the hunter follows on horseback, but it is not till after a sharp and tedious course, with all its windings, that the Çariama, wearied out, either crouches on the ground or takes refuge in some bush, and still this happens the horseman in vain seeks for an opportunity to throw his lasso or pull his trigger.

Wild as this bird is in its natural state, it is easily domesticated, and will live sociably with the other tenants of the poultry-yard. In this state, they will eat little pieces of meat, but refuse maize. When thus tamed, they will walk about the hamlet or village where they have been brought up, and return, after making short trips into the fields, like poultry. The flesh is said to be good.

The nest is composed of dry sticks and branches, covered with cow-dung, and placed upon a low or moderate tree. The eggs are generally two in number, and white. The young are covered with down, but are soon able to run.

The Çariama stands high on the legs, and the hind toe is considerably elevated, so as scarcely to touch the ground. The space round the eye is naked and blueish. The head is crested with light feathers, and long loosely barbed feathers cover the neck. The upper eyelid is fringed with long lashes. General colour above pale umber brown, with fine zigzag marking of a darker tint. Wing feathers blackish, finely barred with white lines, dotted with blackish; under parts whitish. Bill in the adult coral red, dusky in the young; legs orange red, iris yellow. Length 32 inches. Tail moderate and rounded.

The Sariama (*Dicholophus cristatus*).

For details of the osteology and visceral anatomy of the Çariama, see a paper by Mr. Martin in the 'Proceedings of the Zoological Society,' 1836, p. 27.

CARIBBEE ISLANDS. [CARIBS.]

CARIBS, or CARIBBEES, the name of one of the aboriginal tribes of South America. When the Europeans first arrived in America, the Caribs were in possession of the smaller islands of the West Indies, from them called the Caribbee Islands, which lie between Puerto Rico and the Gulf of Paria. They made stout resistance against the European intruders; but at last they were compelled to abandon the islands. A small number still exist on the islands of Trinidad, St. Vincent, and Dominica, and several tribes of them are found on the Orinoco and its tributaries, on the continent of South America. The Caribs are distinguished from the other native tribes by their athletic stature and their great courage and firmness of purpose. They have been accused of cannibalism. The Caribbee Islands included the Leeward and the Windward Islands, and are sometimes called the Lesser Antilles. [ANTILLES.] (Humboldt.)

CA'RICA, a remarkable tree found in various parts of South America, having a simple trunk, from 12 to 20 feet high, and abounding in a milky juice. This fruit is called the *papaw*, and is singularly useful in many ways to the natives where it grows. The fruit is eaten ripe, and when unripe is boiled and used as a vegetable. The juice forms a cosmetic, and the leaves are employed in washing instead of soap. It is also much used in medicine. The milky juice of the fruit is spoken of as a vermifuge; but the most extraordinary property of the papaw tree is, that animals which are fed upon the fruit are found, when killed, to be peculiarly tender.

CARI'NA, in botany, the two oblique front petals of a papilionaceous flower, united by their contiguous edges into an organ having a figure something like that of the keel of a boat.

CARINA'RIA, the name of a genus of molluscous animals, arranged by Cuvier in the order *Heteropoda*, and by Blainville in the family *Nectopoda* of his order *Nucleobranchiata*.

The mollusks of the heteropodous order are distinguished by the structure of the foot, which, instead of forming a horizontal disc, is compressed so as to form a vertical muscular paddle. At the edge of this there is in many species a disc-like sucker. The branchiæ are plume-like tufts, situated on the hinder part of the back, directed forwards; and immediately behind them are the heart, liver, and other viscera. The body is gelatinous and transparent, with a muscular investment, elongated, and generally terminating in a compressed tail. The mouth is furnished with a muscular tube, armed with minute hooks. In swimming the body is reversed, the paddle-like foot being uppermost. These animals are capable of distending their bodies with water.

In the genus *Carinaria* the branchiæ, the heart, liver, and other organs are protected by a delicate transparent shell, somewhat resembling that of the Paper Nautilus, and known to collectors under the name of Venus' Slipper and Glass Nautilus. This shell is no protection to the body generally, being too small for the reception of the animal. The general form is sub-cylindrical and elongated, with a compressed tail acting as a rudder. The whole mass is transparent and dotted with elevated points. The foot is thin, paddle-like, reddish, beautifully reticulated by muscular fibres crossing each other, and furnished with a sort of sucker, by means of which it cannot be doubted that the

mollusk is enabled to adhere to rocks or stones while reposing at the bottom of the sea. The mouth is a retractile muscular tube, furnished with a rasp-like tongue. The course of the œsophagus, stomach, and alimentary canal, is easily seen through the transparent parietes of the body. Sexes distinct. Locality, the warmer seas. Examples:—*Carinaria Mediterranea* (Mediterranean and Indian Ocean), *C. vitrea*, *C. fragilis*. The *C. cymbium* of Lamarck is a doubtful species.

CARINTHIA, a former duchy of Austria, constitutes the northern part of the government of Laibach, in the kingdom of ILLYRIA, and is comprehended in two of its subdivisions, the circles of Klagenfurt, formerly Lower Carinthia, and Villach, formerly Upper Carinthia.

CARINUS, MARCUS AURELIUS, succeeded to the throne conjointly with his brother Numerianus, after the death of their father Carus, A.D. 284. His conduct at Rome, during the absence of his father, had been marked by licentiousness and extravagance. His brother Numerianus, whose character was good and mild, having been murdered by Aper on his return from Persia, the soldiers elected Diocletian, who immediately put Aper to death. Diocletian then marched against Carinus, who collected the troops that were in Italy, and went to meet Diocletian. The two armies met in the plains of Mæsia, near Margum and Viminacum. Carinus was killed by his own officers during the action, upon which the two armies ceased the fight, and proclaimed Diocletian emperor, A.D. 285.

CARLEE. [POONA.]

CA'RLI, GIAN RINA'LDO, was born in 1720 of a noble family at Capo d'Istria. At the age of twenty-four he was appointed by the Venetian senate professor of a new chair of astronomy and navigation established at Padua, and had the superintendence of the naval school at Venice. After seven years he resigned his chair, and returned to Istria, from which time his attention was chiefly given to subjects of political economy and antiquities. In 1754 Carli published the first volume of his great work, 'Delle Monete e della Istituzione delle Zecche d'Italia.' (On the History of the Coins and Currency, and on the Institution of the Mints of Italy). Carli employed nine years in the compilation of this work. A new edition, with corrections and additions by the author, was published at Milan in 1785, in 7 vols. 4to. In his 'Ragionamento sopra i Bilanci Economici delle Nazioni,' Carli asserted, against the then received opinion of the economists, that the balance of trade between nation and nation proved little or nothing as to the real prosperity of each.

Carli was president of the new council of commerce and public economy established at Milan, as well as of the board of public studies, in 1765. In 1771 he was made in addition president of the new council of finances, but for several years before his death the Emperor Leopold allowed him to enjoy the income of his offices without the toils. He devoted his time chiefly to complete his 'Antichità Italiche,' which appeared in 1788, 5 vols. 4to. He lived some years longer, and died in Feb. 1795. Carli's works were published in 19 vols. 8vo., Milan, 1784–94, exclusive of his 'Italian Antiquities.' He left also many works in MS.

(Ugoni, *Storia della Letteratura Italiana*; Bossi, *Elogio Storico di Gian Rinaldo Carli.*)

CARLINA. [THISTLE.]

CARLISLE, a city, parliamentary borough, municipal borough, and port, in Cumberland, 302 miles N.W. by N. from London, by the road. It has communication by railway through Newcastle to London and Edinburgh, through Kendal to London, through Maryport to Whitehaven, and through Lockerby to Moffatt, on the line now (1848) constructing to Glasgow. Carlisle is supposed to be of British origin, and there is reason to conclude that it was a Roman station, the Luguvallum of the 'Itinerary' of Antoninus. The Danes destroyed it about the end of the ninth century; and it remained desolate till after the Norman Conquest. Its restoration and the erection of the castle are attributed to William Rufus. The subsequent history of Carlisle, down to the junction of the two kingdoms, is intimately connected with the wars between England and Scotland, and the history of the border feuds and forays.

Carlisle, as an important border-town, a fortified city, and a place of retreat to the surrounding inhabitants, was, at different periods in its early history, very populous; but after the union of England and Scotland, under James I., it sunk into decay, from which it has only begun to recover since the commencement of the present century. The population in 1763 was about 4000; in 1841 the total population amounted to 23,012.

Carlisle is pleasantly situated on an eminence, nearly inclosed by three streams. The largest of these, the Eden, runs past the city in a north-western direction into the Solway Frith; the other two, the Caldew and the Pettrel, fall into the Eden on the west and east sides of the city respectively. A handsome elliptical bridge of five arches, and of white freestone, was erected over the Eden in 1812. Two stone bridges, of one arch each, are thrown over the Caldew, and one over the Pettrel of three arches, about a mile from the town.

Before the Reformation there were several ecclesiastical establishments in the city. In the year 1133 Henry I. erected Carlisle into a see, giving its bishop jurisdiction over a large portion of Cumberland and Westmoreland. The cathedral is an ancient building of red freestone, displaying specimens of different styles of architecture, some parts of which are assigned to the Saxon times. In addition to the cathedral and St. Mary's, there are three other churches, besides several places of worship for dissenters. The county gaol and county house of correction are within the city. There is an endowed grammar-school in Carlisle, founded by Henry VIII., and there are upwards of 50 other schools. The city also contains a number of charities and benevolent institutions; among which are an Infirmary, a Fever Hospital, a Dispensary, and a Humane Society.

The castle of Carlisle lies between the city and

the Eden, on a slight eminence overlooking the river. It is still maintained as a garrison-fortress. Scarcely any portion of the old walls and bulwarks of the ancient city now remain.

Carlisle is divided into the ancient city and the suburbs, which make together the city popularly so called. The ancient city was formerly the parliamentary borough; but under the Reform Act a large portion of the suburbs was included. The suburbs contain a larger population than the ancient city. The population of the parliamentary borough in 1841 was 20,815: it returns two members to the House of Commons. Under the Municipal Reform Act the town is divided into 5 wards, with 10 aldermen and 30 councillors.

The principal business of Carlisle consists in its manufactures of cotton goods and ginghams, and in a coasting trade. In 1823 a ship canal was completed from Carlisle to Bowness, on the Solway Frith, a distance of eleven miles, by means of which vessels of 80 to 100 tons can come up to the town. There is now frequent communication between Carlisle and Liverpool by steam-vessels. The number of registered vessels Jan. 1, 1847, was 43 (2,942 tons).

(*Communication from Carlisle; Parliamentary Papers.*)

CARLISLE, SIR ANTHONY, surgeon, was born near Durham, in the year 1768. He commenced his professional education with an uncle at York, and from thence he was transferred to Durham, where he remained for some time under the instruction of Mr. Green, the founder of the hospital in that city. Having finished his preparatory studies, he repaired to London, and attended the lectures of the Hunters, Dr. Baillie, and Mr. Cruikshank. He was at the same time pupil to Mr. Watson, then surgeon to the Westminster Hospital. On the death of Mr. Watson, in 1793, Mr. Carlisle was appointed his successor. He became a member of the College of Surgeons, and was early appointed one of the council of that body. He was for many years on the Board of Examiners, and one of the curators of the Hunterian Museum. He also held the appointment of Professor of Surgery and Anatomy, and in 1829 he filled the office of President. He was appointed Surgeon Extraordinary to George IV. when he was Prince Regent, and was knighted by him at the first levee he held as king. He was also surgeon to the late Duke of Gloucester, to whom he was introduced by the learned Dr. Samuel Parr. In 1808, on the death of Mr. Sheldon, he was appointed Professor of Anatomy to the Royal Academy, an office he held for sixteen years. He died in London on the 2nd of November, 1840.

Sir Anthony Carlisle owed his position to the activity and industry with which he pursued the various departments of science connected with his profession. His early acquaintance with John Hunter gave him a taste for comparative anatomy, which he pursued with much ardour, and many of his earlier literary productions were on this subject.

To medical literature Sir Anthony made many contributions. One of the first was 'On the Nature of Corns and the Mode of removing them,' published in Simmons's 'Medical Facts and Observations,' 1797; 'A New Method of applying the Tourniquet,' in 'Lond. Med. and Phys. Journal,' 1797; 'On the general and indiscriminate Use of Bougies,' ibid. 1800; 'Letter to Sir Gilbert Blane on Blisters, Rubefacients, and Escharotics, giving an account of the employment of an instrument adapted to transmit a defined degree of heat to effect those several purposes,' London, 1826. In 1817 he published a larger work entitled 'Essay on the Disorders of Old Age and the Means of prolonging Human Life,' 4to., London.

During his connection with the College of Surgeons he delivered two of the Hunterian orations; one in 1820, and one in 1826. The first was on the constitution of organised bodies, and the second on the connection between vascular and extra-vascular parts. There are some preparations illustrative of the union of these parts in the Hunterian Museum prepared and presented by Sir Anthony Carlisle. One of the most remarkable of his papers on general subjects was one on 'Galvanic Electricity,' in 'Nicholson's Journal,' in which he first pointed out the fact that water might be decomposed by the galvanic battery.

Great progress was made in this country in surgical science at the beginning of this century, and Sir Anthony early in life was always anxious to improve, and surgery is indebted to him for many minor improvements in instruments, &c. 'He first,' says Mr. Pettigrew, 'substituted the thin-bladed, straight-edged amputating knife, approaching in its kind to the ordinary carving-knife, for the clumsy crooked knife of former days, and also was the first to employ the carpenter's saw, simple in its construction compared with that formerly employed. He was the first to use the *bistouri caché* in this country, and he has by the aid of Mr. Stodart introduced various improvements in surgical apparatus.'

The talents of Sir Anthony Carlisle consisted in his observing power. His contributions to science are frequently deficient in sound generalisation. His rapidity of observation and his power of application made up for this deficiency, and gave him a position while he lived which his works will hardly secure for him now that he is dead.

(Pettigrew, *Medical Portrait Gallery; Lancet; London Medical Gazette.*)

CARLOS, DON. [PHILIP II.]

CARLOVITZ. [SLAVONIA.]

CARLOW, an inland county of the province of Leinster, in Ireland, is bounded E. and S.E. by the counties of Wicklow and Wexford, S.W. and W. by Kilkenny, N.W. by Queen's County, and N. by Kildare. Its greatest length from north to south is 29 English miles; breadth, east to west, 20½ miles; area, 346 square miles, or 211,440 acres. The population in 1841 was 86,228.

Carlow is the smallest county, excepting Louth, in Ireland. The whole county may be considered as an extension of the great central plain of Ireland. It is traversed in a direction nearly

parallel to its western side by the Barrow, which forms a portion of the boundary between Carlow and Kilkenny. The Barrow has been made navigable through its whole course in Carlow, and affords the means of a considerable export trade to Carlow, the assize town, which is situated near this river's entrance into the county. The Slaney flows through the eastern part of the county. Carlow derives its chief facilities of transport from the Barrow navigation, which affords a water-carriage south to Waterford, and north by the Grand Canal, a branch of which meets it at Athy, to Dublin and the Shannon. The greatest part of the surface of the county consists of limestone, but the eastern side is a field of granite extending from the great granite chain of Wicklow and Wexford. In the limestone district the soil is gravelly but warm; it is lighter and more peaty in the granite district. The crops generally raised are potatoes, wheat, barley, and oats, the proportion of each being pretty much in the order in which they are here enumerated. The system of farming in a great part of Carlow may be said to be good, and on the whole the county is a rich one, and the farmers, whether on a large scale or not, are generally comfortable. The manufacture of coarse woollens was at one time carried on to some extent in Carlow, but the trade is now altogether gone. The county is essentially agricultural, and its staple is the raising and manufacture of provisions, especially corn, butter, flour, oatmeal, cattle, and pigs. On the Barrow navigation there is a fall of rather more than one foot per mile, which gives a great water-power, available for mills at almost every weir, and the number of corn-mills along the line is accordingly very great. Corn-mills in Ireland are generally large edifices, and many of those in the county of Carlow belong to the first class of such buildings. The provision trade consists chiefly in bacon for the home market. Large quantities of barley are malted by the resident maltsters and distillers.

The county of Carlow is divided into 7 baronies, and is in the diocese of Leighlin. It returns three members to the House of Commons, two for the county, and one for the town of Carlow.

The only towns which require notice are the following:—

Bagnalstown is pleasantly situated on the eastern bank of the Barrow. There are a sessions-house, a church, and a Roman Catholic chapel in the town. The population in 1841 was 2225.

Carlow is the county town. [CARLOW.]

Tullow is situated on the Slaney, 48 miles S.W. by S. from Dublin, by the road. It is a thriving place, and carries on a good retail trade with the adjoining districts. A handsome church with a tower, and a Roman Catholic chapel with a spire, have been erected within these few years. The population in 1841 was 3097.

There is nothing in the civil history of Carlow which requires special notice. It was implicated in the wars and rebellions of the province, and had its full share of forfeitures.

The chief antiquities of the county are military, cromlechs and the cathedral church at Old Leighlin being the only pagan and ecclesiastical monuments of interest. Of the cromlechs one near Carlow is the most remarkable, the covering-stone of which weighs nearly 90 tons. Of the castles those at Carlow, Tullow, and Leighlin Bridge are the most ancient. Cloghgrenan, a castle of the Butlers on the right bank of the Barrow, is still standing. Clonmore, another stronghold of the same family, situated near Hacketstown, remains in a state of good preservation; it is a strong pile of 170 feet square, flanked with square towers at the angles.

The history and antiquities of the county have been illustrated in a work on that subject by Mr. Ryan, which furnishes all the historical facts of importance.

(For statistical and geographical details see *Statistical Survey of the County of Carlow; Parliamentary Papers and Reports; Trans. Geolog. Society*, vol. v.)

CARLOW, a parliamentary borough, the county town of Carlow, is situated on the Barrow, 50 miles S.S.W. from Dublin. The boundaries of the ancient borough, including only that portion of the town which stands upon the left bank of the Barrow, were extended by the 2nd and 3rd Will. IV. c. 89, so as to embrace the suburb of Graigue, in Queen's County, on the right bank of the river. The total population in 1841 was 10,409, of whom 8649 were Roman Catholics. Carlow returns one member to parliament. The corporation was dissolved by the late Irish Municipal Reform Act.

The town of Carlow grew up round the castle which was founded here by the early English conquerors about the end of the 12th century. It was erected into a borough by William Earl Marshal about 1208, and was surrounded with walls in 1362 by Lionel, Duke of Clarence, who removed the king's exchequer hither from Dublin. The most remarkable object of antiquity in Carlow is the castle, now in ruins. Its dilapidation has been comparatively recent. The whole structure, a square of 105 feet, with massive round towers at the angles, was standing in 1814, when an injudicious attempt was made to modernise it by piercing new windows and diminishing the thickness of the walls, in consequence of which more than one-half of the building fell to the ground. Under the south side of the ruins the Burrin, a small river, enters the Barrow nearly at right angles. The town consists chiefly of two main streets, one running nearly parallel with the Barrow, and crossing the Burrin by a neat iron bridge; the other at right angles leading to the suburb of Graigue, in Queen's County, by a handsome stone bridge of four arches over the Barrow.

The chief public buildings are—2 churches, the Roman Catholic cathedral for the united dioceses of Leighlin and Ferns, a Roman Catholic college and school, 2 nunneries, Presbyterian, Methodist, and Quakers' places of worship, the county court-house, county prison, and county infirmary, district lunatic asylum, fever hospital,

and barracks. The town has no public supply of water, which is procured from the rivers and by private pumps. The chief manufacture carried on at Carlow is that of flour and oatmeal, large grinding mills being driven both by the Burrin and Barrow. Butter of superior quality is largely exported. The Barrow, which is navigable above the town to its junction with the Grand Canal at Athy, affords great facilities for exportation to Dublin and Waterford.

The assizes for the county are held at Carlow, and also quarter-sessions and petty sessions.

(Thom's *Irish Almanac*, 1846; *Parliamentary Papers.*)

CARLSBAD. [ELLENBOGEN.]

CARLSKRONA. [SWEDEN.]

CARLSRUHE, the capital of the grand duchy of Baden, stands in the circle of Middle Rhine, in 48° 56′ N. lat., 8° 22′ E. long., 33 miles S. from Heidelberg by the Mannheim and Baden Railway, and has a population of 22,000. Its origin was a hunting-seat built on the spot by Charles William, Margrave of Baden, in 1715. It is built on an elevation about 4 miles E. of the Rhine and 13 from the Black Forest: its form is that of an extended fan, the grand-ducal palace constituting the central point, from which the streets diverge. The streets commence from a semicircular row of handsome houses which fronts the palace and is called the Great Circle. The style of the houses is various; some are in the Dutch, some in the French, and many in a mixed Greek and Roman style. The palace is remarkable only for its tower called Bleythurm, which stands in its centre; the right wing of the edifice contains the public library of 90,000 volumes, a collection of antiquities, coins, &c.; and the left wing, the church of the court. The view from the Bleythurm is splendid, comprehending the whole city and the Hardt Forest, which nearly surrounds the town, and is pierced by roads corresponding with the several streets; beyond this to the west are seen the Vosges Mountains and the windings of the Rhine, the Black Forest Mountains on the south, and those of the Bergstrasse on the north. The Great Circle contains the government offices, and the palace of the Margrave Maximilian. Carlsruhe has nine public squares, the finest of which is the market-place. The stone pyramid, with an inscription in memory of Charles William, the founder of the place, whose remains are inclosed in it, stands in the centre of the square. The new Protestant, the new Catholic, and the garrison churches are handsome buildings. The building for the legislative assembly is three stories high, and contains two fine halls for the sittings of the two chambers, besides residences for the president, officers, &c., and depositories for the archives and papers. Among the important institutions of Carlsruhe, to all which are attached handsome buildings, are—the museum; the mint and offices of works; the academy of the arts and sciences, with a picture-gallery attached to it; the arsenal, polytechnic school, post-office, and barracks. The town also possesses a botanical garden, a veterinary school, four hospitals, a deaf and dumb asylum, and other useful and benevolent institutions. There is a theatre attached to the palace. The inhabitants derive their livelihood principally from trade, mechanical employments, and manufactures. The chief manufactures are silks, cottons, carpets, woollens, jewellery, tobacco, leather, and articles of luxury. The Palace Gardens and those called Amaliensruhe are always open to the public, and afford pleasant promenades. There are also many attractive spots in the neighbourhood.

CARLSTADT. [CROATIA.]

CARMAGNO'LA, FRANCESCO BUSSONE DI, Count of Castelnuovo, was born at Carmagnola, in Piedmont, about the year 1390. He became one of the most celebrated Condottiers of his time, first under the Viscontis, Dukes of Milan, and afterwards in 1426 as captain-general of the troops of Venice against Filippo Maria Visconti, whom he defeated in more than one battle. After a peace in 1428, the war broke out anew in 1431, Carmagnola retaining the command of the Venetian forces; but, having been unsuccessful in two or three enterprises, the Venetian senate became suspicious, sent for him home from the army, received him with great distinction, then caused him to be arrested, charged with high treason, tortured, and finally, on May 5, 1432, beheaded. Concerning the guilt or innocence of this celebrated commander much diversity of opinion prevails.

CARMEL, MOUNT. [SYRIA.]

CARMINATIVES, agents chiefly obtained from the vegetable kingdom, are employed to promote the expulsion of flatulence. Plants possessed of an aromatic principle owing to the presence of a volatile oil, are employed to effect this end, which they sometimes accomplish even when applied to the external surface of the stomach, and much more certainly when taken internally. Instead of the plants in a raw or dried state, the oil is often extracted from them by distillation; or a tincture, or even a distilled water, is formed from them, and administered under similar circumstances: and this last mode is in general the best.

The safest and most effectual means of avoiding the distressing symptoms attendant on the disengagement of flatus are great attention to diet and regimen. Regular exercise should be taken daily. The food should be plain; soups and much liquid, particularly tea, should be avoided, and the person should retire to rest at an early hour.

CARMINE, one of the most beautiful of the red colours used by painters. It is obtained from cochineal; and its colouring matter, called *carmin*, may be extracted by the aid of ammonia. [COCHINEAL.]

CARNAC. [MORBIHAN.]

CARNAC. [THEBES.]

CARNATIC, a province of Hindustan, extending from 8° to 16° N. lat., and included between 77° and 81° E. long. This province comprehends the former dominions of the Nabobs of Arcot. On the E. it is bounded by the Bay of Bengal, having a line of coast 560 miles long; and on the W. are Coimbatore, the Barramahal districts, and districts ceded by the Nizam. The breadth of the province is nowhere greater than 110 miles. The chain of hills, known as the Eastern Ghauts, commence in the south, about 11° 20′ N. lat., and

extend northward in a direct line to 16° N. lat., separating the Carnatic throughout their extent into two divisions, one called Carnatic Balaghaut, or above the Ghauts; the other the Carnatic Payeenghaut, or below the Ghauts.

The climate of the Carnatic Payeenghaut is considered to be the hottest in India. The soil of the province near the coast is a mixture of sea-sand and loam. In many parts there is a considerable efflorescence of common salt upon the surface in dry weather. In the valleys along the ghauts, and between the ranges of hills, the soil is chiefly loam and sand, with a considerable proportion of vegetable mould. In these valleys, and especially where they are watered by rivers and tanks, the soil is tolerably fertile; the high grounds are always poor, because of the gradual washing away of the soil.

The principal rivers of the province are the Penaur, the Palaur, the Coleroon, and the Vaygaroo. The whole of these have their sources in the table-land above the ghauts, and discharge themselves into the Bay of Bengal. [HINDUSTAN.]

The low lands are chiefly devoted to the cultivation of rice, and their fertility depends upon the facility with which they can be irrigated. The high grounds which cannot be watered are principally employed for raising different descriptions of millet, and a few leguminous plants. Sugar is cultivated only in small quantities, owing to the poorness of the soil. Indigo answers better, and cotton, in some situations, grows luxuriantly.

The great bulk of the inhabitants of the Carnatic are Hindoos, the Mohammedans being very thinly scattered over the country.

In 1801 the civil and military government of the Carnatic was transferred to the East India Company by the Nabob Uzeem-ud-Dowlah, on the Company engaging to pay him annually one-fifth of the net revenue of the country, and providing for the principal officers of his government. [ARCOT.]

In every part of the province there were formerly numerous fortresses, many of which have crumbled to pieces, and those still visible are fast falling to decay.

(Rennell's *Memoir of a Map of Hindustan*; Mill's *History of British India*.)

CARNATION, a kind of dianthus, or pink, a variety of the *Dianthus caryophyllus* of botanists, much esteemed by florists for the beautiful colours of its sweet-scented double flowers. It is usually grown in rich light loamy soil, in which sand enough is mixed to prevent water stagnating, and is propagated by either cuttings or layering. A great many varieties are cultivated, the most esteemed of which are those with a strong tall stem about three feet high, and regularly formed flowers with the stripes or markings clear, well defined, and broadest near the end of the petals.

CARNE'ADES, a native of Cyrene in Africa, was the founder of the school of philosophy called the New Academy. He was probably born about B.C. 214. His first instructor appears to have been Diogenes the Stoic. He afterwards attended the lectures of Egesinus, master of the academy, and succeeded him in the chair. In this situation he attained great eminence, and he was selected with two others, Diogenes the Stoic, and Critolaus the Peripatetic, to go on an embassy from Athens to Rome (B.C. 154). He died at the age of ninety.

The doctrines of Carneades appear to have differed little from those of Arcesilaüs and the other philosophers of the Middle Academy. [ARCESILAUS.]

CARNELIAN, or CORNELIAN. [AGATE.]

CARNIOLA, a former duchy of Austria, which now forms the circles of Laybach, Neustadtl, and Adelsberg, in the government of Laybach and kingdom of ILLYRIA.

CARNIVAL, or CARNEVAL, from the Italian *Carnevale*, or 'farewell to flesh.' It is properly a season of feasting, dancing, masquerading, and buffoonery, confined to Roman Catholic countries, which lasts for a few days, ending on Ash-Wednesday, when it is succeeded by the austerities of Lent.

CARNI'VORA, a term applicable to any creatures which feed on animal substances, but now restricted to a group of mammiferous quadrupeds which prey upon animals.

Cuvier includes in this order, which he terms *Les Carnassiers*, the bats, or *Cheiroptera*, and the *Insectivora* (as the shrews, moles &c.), regarding them respectively as merely families. Naturalists however now consider them as distinct orders, and apply the term *Carnivora* as the title of an order to the bears, weasels, wolves, cats, &c., which constitute so many families. Cuvier's families of the Carnassiers are—1, *Cheiroptera*; 2, *Insectivora*; 3, *Carnivora*. Under *Carnivora* the following tribes are arranged:—1, *Les Plantigrades*, as the bears; 2, *Les Digitigrades*, as the weasels, the dogs, the cats, &c.; 3, *Les Amphibies*, as the seals. The plantigrade tribe of Cuvier is composed of heterogeneous genera, which, except in walking more or less completely on the soles of the feet, have no other bond of alliance. The other tribes are natural. The terms however, *Plantigrada*, *Digitigrada*, and *Amphibia* are in themselves objectionable: they refer to qualities of minor importance, on which *tribes* cannot be founded. The term *Amphibia*, indeed, as applied to the seals, is most inconsistent; it is the title of an order of reptiles (regarded by some as a class per se), of which the frog, newt, siren, &c. are examples.

The Carnivora are now divided by most zoologists into the following families:—1, *Felidæ* (Cat tribe); 2, *Mustelidæ* (Weasels, Badgers, Otters, &c.); 3, *Viverridæ* (Civet, Genet, Ichneumons, &c.); 4, *Hyænidæ*? (Hyænas); 5, *Canidæ* (Wolves, Foxes, &c.); 6, *Ursidæ* (Bears); 7, *Phocidæ* (Seals).

In the order *Carnivora* we have the thirst for blood at its highest degree of development, and with it the power and the instruments for gratifying the appetite. Four large, long, and distant canines, separated by the intervention of six incisors in each jaw (the root of the second of the lower incisors being a little deeper planted than the others)—molars, either formed entirely with cutting edges, or constructed partly with blunt tubercles;

—these, with the powerful mechanism of the jaw in which they are set, present a most formidable apparatus for finishing the bloody task which the rest of the frame of the carnivora is so nicely adapted for commencing and continuing. The more completely trenchant these molars are, the more completely carnivorous are the habits of the animal; and the different gradations may be in general safely traced by observing the proportional extent of surface, considered with reference to its tubercular or cutting shape. The bears, which, taken as a whole, may be said to be capable of supporting themselves on vegetables, have nearly all their molar teeth tuberculated. [BEAR.]

The anterior molars have the most cutting edges, and then comes a molar larger than the rest, with a tuberculated heel or process more or less developed, and behind it one or two small teeth almost entirely flat. With these small teeth the dogs, as Baron Cuvier has observed, masticate the grass which they occasionally swallow for medicinal purposes; and the same author agrees with M. Frederick Cuvier in naming the great molar above and its antagonist below *carnassières* or *flesh-cutters*, the anterior pointed molars *false molars*, and the posterior blunt molars *tuberculeuses* or *tuberculated molars*.

By observing these differences of dental form, the genera of carnivora are most surely established, and it may be laid down as a general rule that those carnivorous animals which have the shortest jaw and the least development of the *false molars* are those in which the sanguinary propensity and the destructive power co-exist in the highest degree.

The prevailing feature of the skull is the great development of the zygomatic arch, affording room for the action of the powerful muscles that work the trenchant jaw; the orbit is not separated from the temporal fossa. The articulation of the bones of the fore-arm in most of the carnivora is so constructed as to allow of free motion, though in a degree inferior to that bestowed on the quadrumana. The brain (cerebrum) is considerable in bulk, well marked, but without a third lobe, and does not cover the cerebellum. Of all the senses that of smelling seems to be in the highest perfection, the pituitary membrane being extended over a manifold labyrinth of bony plates. The intestines are comparatively short, the nature of their food requiring less elaboration than that necessary for the extraction of nourishment from vegetables.

CARNOT, LAZARE NICOLAS MARGUERITE, was born at Nolay, in Burgundy, May 13, 1753. He entered the army in 1771, and in 1791 was elected to represent the Pas de Calais in the legislative assembly, and became a member of the military committee. He was one of those who voted for the death of the ex-king. In 1793 he became a member of the committee of public safety; but he appears to have confined himself almost entirely to military affairs, and was in truth the war-minister of the committee. In 1793 he joined the army of the north, and was mainly instrumental in gaining the victory of Watignies. In 1795 he was elected for seventeen different places, but was shortly afterwards proscribed, and sought refuge in Germany. He was recalled by the first consul, and was made minister of war, but lost all when he voted against the consulate for life. After the Russian campaign, when France was on the eve of invasion, he offered his services to Napoleon, and received the command of Antwerp, which he held out until the abdication of 1814. When Napoleon returned from Elba, he was again appointed minister of war. After the restoration, he retired first to Warsaw, and then to Magdeburg, where he died, August 2, 1823. He was twice a member of the Institute, and twice expelled; the first time by the directory, and afterwards on the restoration of 1814.

He published several words on fortification and mathematics. The mathematical works are remarkable for the elegance of his geometry and the clearness of his mode of expression. The chief of them are—'Réflexions sur la Métaphysique du Calcul Infinitesimal;' 'Géométrie de Position,' Paris, 1803; 'Principes Fondamentaux d'Equilibre et du Mouvement,' 1803; 'De la Défense des Places Fortes,' 1808. He published also some political tracts, and in particular, a justification of his public conduct in 1815.

CAROB TREE. [CERATONIA.]

CAROLINA, NORTH, one of the United States of North America, extends from 33° 50′ to 36° 30′ N. lat., and from 75° 30′ to 84° W. long. Its extreme length from near the source of the Tenessee River to Cape Hatteras is 430 miles, and its average breadth may be about 120. Its area is 48,000 square miles. It is bounded E. by the Atlantic Ocean, S. by South Carolina, N. by Virginia, and W. by Tenessee. The population in 1840 was 753,419, of whom 245,817 were slaves.

The western portion of this State, which is somewhat more than one-fourth of its surface, lies in the Appalachian Mountains, and is traversed by several of its ridges, of which the Blue Ridge forms the eastern portion. To the east of them extends the higher terrace, or the hilly country. Between this region and the coast spreads the lower terrace.

A tract of sand runs along the whole coast of North Carolina, which is indented by many sounds and bays, some narrow and some wide. The inlets are shallow and dangerous, and Ocracoke is the only one through which vessels pass. Cape Hatteras and Cape Look-out are projecting points of the coast, and Cape Fear is on an island off the mouth of Cape Fear River.

The country for 60 or 80 miles inland is a dead level; the streams are sluggish and muddy, and there are many swamps, on which fine rice is grown. The soil is poor except on the margins of the rivers, where it is often rich. The western part of the State is an elevated table-land, about 1800 feet above the level of the sea, which contains some high ranges and lofty summits, among which Black Mountain is 6,476 feet high. Between the sandy level and the table-land is a belt about 40 miles wide, of moderately uneven surface, which extends to the lower falls of the rivers. This tract has a sandy soil, on which the pitch pine is the prevailing growth. Above the falls the country is uneven, the streams are rapid, and the soil more fertile, producing wheat, rye, barley, oats, and flax. In the low country grapes grow wild.

Indian corn is raised throughout the State, and in some parts cotton. In the upper country, oak, walnut, lime, and cherry-trees of large size abound. In the northern part of the State, and extending into Virginia, is the Great Dismal Swamp, 30 miles long and 10 wide. A canal passes though this swamp with a feeder from Lake Drummond, which is in Virginia, in the centre of the swamp. The swamp is thickly wooded with pine, juniper, and other trees.

The principal rivers are — the Chowan, navigable 30 miles for small vessels; the Roanoke, 150 miles long; the Pamlico, navigable for 30 miles; the Neuse; the Cape Fear River, 280 miles long, with 11 feet water at Wilmington; the Yadkin; and the Catawba. All the rivers are much obstructed by bars at their mouths. The State has few good harbours.

The principal minerals of North Carolina are gold and iron. The gold region is on both sides of the Blue Ridge. It is found in grains, in small lumps, and in veins.

North Carolina is divided into 68 counties. Raleigh, 6 miles W. from the Neuse, the capital of the State, is regularly built, and contained in 1840, 2,200 inhabitants. Newbern, on the Neuse, 30 miles from Pamlico Sound, contained in 1840 a population of 3690, and has a little commerce. Fayetteville, on the Cape Fear River, carries on a considerable commerce, and had in 1840 a population of 4285 inhabitants. Wilmington, 40 miles from the mouth of Cape Fear River, is also a thriving place, and had in 1840 a population of 4744. The harbour admits vessels of 300 tons, but there is a dangerous shoal.

The exports consist of live cattle, tar, pitch, and turpentine, lumber, Indian corn, cotton, tobacco, pork, lard, tallow, &c. Most of these are sent to South Carolina and Virginia to be exported thence. The exports in 1840 amounted to 387,484 dollars; the imports to 252,532 dollars.

The University of North Carolina at Chapel Hill, 27 miles N.N.W. from Raleigh, was founded in 1791. Davidson College was founded in 1837. In these two institutions there were, in 1846, 194 students. There were in the State 141 academies, with 4398 students, and 632 common and primary schools with 14,937 scholars. Of white persons, over 20 years of age, 56,609 could neither read nor write.

The constitution was adopted in Dec. 1776, and was revised and modified in 1835. The senate and house of representatives are elected biennially by the people. The number of senators is 50, and the number of representatives 120. The governor is chosen for two years. There is an executive council of 7 members chosen biennially by a joint vote of both houses. It sends two members to the senate in congress, and nine to the house of representatives. The suffrage extends to all white citizens 21 years of age who have resided in the State 12 months previous to the election; but to vote for a senator a freehold of 50 acres of land is required.

The first permanent settlement in North Carolina was made on the eastern bank of the Chowan, by emigrants who fled from religious persecution in Virginia, about 1660. In convention, Nov. 27, 1789, this State adopted the constitution of the United States.

(Haskel and Smith, *Gazetteer of the United States.*)

CAROLINA, SOUTH, one of the United States of North America, lies between 32° and 35° 10′ N. lat., and 78° 24′ and 83° 10′ W. long. Its greatest length from its E. angle on the Atlantic to its extreme W., at the junction of the Savannah and Chatuga rivers, is 275 miles, and its mean width nearly 120 miles. Its area is 25,000 square miles. It is bounded E. by the Atlantic, S.W. by Georgia, and N. by North Carolina. The population in 1840 was 594,398, of whom 327,038 were slaves.

South Carolina, like N. Carolina, exhibits three different regions. The most western districts are covered with ridges of mountains and hills which belong to the Appalachian system. East of this mountain region extends the hilly country, which is followed by a low plain that spreads over the eastern districts of the State to the ocean. The low plain comprehends little more than one-fourth of the whole, and the remainder is almost equally divided between the other two regions.

The northern portion of the coast of South Carolina to Winyaw Point forms an unbroken line of low sandy shore. South of that cape the shores, though low, are divided by a great number of inlets, which are the mouths of rivers, which generally divide into numerous branches before entering the Atlantic Ocean, and by their numerous channels cut the shores into islands, the surface of which is very little elevated above high tides. The inlets dividing the islands as well as the rivers are comparatively very shallow. In two points only can the coast be approached by large vessels. One place is Charleston Harbour, which is formed by the junction of two small rivers, the Cooper and Ashley, the channel of which admits vessels of 16 feet draught. The other is Port Royal entrance, formed by the Broad River, the common æstuary of some little creeks into which the tide ascends to a considerable distance.

The plain along the sea-shore, which extends about 80 miles inland, is a uniform level. At its western border it has a gentle rise and imperceptible ascent to about 200 feet above the sea. The soil is sandy and barren, but it is intersected along the rivers by fertile tracts which yield rich crops, especially of rice. A portion is covered with numerous swamps and morasses, overgrown with heavy timber, such as oak, ash, and cypress. To the west of this plain stretches a chain of sandy hills from 20 to 40 miles in breadth, beginning at the upper course of the river Pedee in North Carolina, and extending across the state to the banks of the Savannah. This tract produces nothing but small pine-trees and some shrubs, except in the narrow valleys, which are very fertile. In this region the rivers form rapids. The country farther west is broken into hill and dale. The valleys and the lower declivities of the hills have a fertile soil, which produces good crops of grain. The more elevated parts of the hills are covered with oak and other large trees. The hilly country gra-

dually rises into mountains, which at the western extremity of the State attain a considerable height, the Table Mountain being 4000 feet above the sea.

The principal rivers are the Pedee, the Santee, and the Savannah. The Pedee rises in the Blue Ridge in North Carolina, and is first called Yadkin. It flows generally S.S.E. till its junction with the Little Pedee, whence it flows S.S.W. to the port of Georgetown, at which place it is called Winyaw Bay, and forms a wide æstuary. As far as its course is included in this State it is navigable for river boats. The Santee is formed by two great branches, the Wateree and the Congaree. It is navigable for boats of 70 tons' burden to Camden, above which town are the Catawba Falls; but, as the falls may now be avoided by a canal cut along the river, called the Wateree Canal, it may be ascended much higher, at least by river boats. The Savannah has its farthest branches in the western district of South Carolina and the northern parts of Georgia, and forms, during all its course, a distance of 250 miles S.S.E., the boundary between both States. It has 17 feet water on its bar, and is navigable for large vessels to the town of Savannah, and for river vessels and steam-boats to Augusta, above which town some rapids occur.

The climate of the low plain is very hot in summer, but comparatively mild in winter. Snow seldom falls near the sea, and is soon dissolved. In the upper country snow and frost occur annually.

The principal objects of agriculture in the low plains are rice and cotton, the latter being also cultivated in some districts farther inland. The sugar-cane is only grown with advantage in the most southern part of the state. The fruits of the sea-coast are oranges, lemons, pomegranates, olives, and figs. In the upper country all the grains and vegetables of England are grown, with Indian corn in addition. The forests contain fine timber trees, especially oak, beech, and hickory.

The domestic animals are those of Europe. There are still found in the mountainous districts deer, bears, wolves, wild cats foxes, racoons, opossums, and polecats. The wild turkey is pretty common in the upper country, and the wild pigeons come at certain seasons in great numbers. Many kinds of serpents are known, among which is the rattlesnake. Alligators abound near the head of tide-water in the rivers, and grow to a great size.

No metal abounds, except iron, which is met with in several places in the upper country. A little gold is found, and some copper and lead are wrought.

The principal town of South Carolina is Charleston. [Charleston.] The capital is Columbia, on the left bank of the Congaree, immediately below the junction of the Saluda and Broad rivers. The population, in 1840, was 3500. It is the seat of the South Carolina College, which had, in 1846, 160 students. Hamburg, on the eastern bank of the Savannah, opposite Augusta, contained, in 1840, about 2500 inhabitants. Beaufort, on Port Royal Island, had 1100 inhabitants. Georgetown, on the upper end of Winyaw Bay, near the mouth of the Pedee, has some commerce, and had, in 1840, 2500 inhabitants. Camden, on the Wateree, contained, in 1840, 1000 inhabitants.

To facilitate internal commerce a few short canals have been cut, especially to avoid the rapids of the rivers. The most important is the Santee Canal, which extends 22 miles from Charleston Harbour to the Santee River. South Carolina Railroad extends 136 miles, from Charleston to Hamburg.

The exports consist of cotton, rice, tobacco, and hides, and the imports of manufactured goods, and the productions of the East and West Indies, with wines from the countries of southern Europe. The exports, in 1840, amounted to 10,036,769 dollars, and the imports to 2,058,870 dollars.

There were in South Carolina, in 1840, 117 academies with 4326 students, and 566 common and primary schools.

The legislative body is composed of a senate and a house of representatives. The senators, 45 in number, are elected by districts and by ballot for the term of four years. The representatives, 124 in number, are chosen for two years. Every free white male citizen 21 years of age has a vote in the election, under certain qualifications. The executive power is vested in a governor, elected by the joint vote of the legislature for two years. The chancellor and judges are appointed by joint ballot of the two houses, and hold their offices during good behaviour. The number of districts, which name is here substituted for that of counties, is 29. The State sends two members to the senate in congress, and seven to the house of representatives.

The first settlement of whites in North Carolina was about 1670; but the first permanent establishment was made in 1680 on the site of Charleston.

(Darby's *United States*; Haskel and Smith, *United States Gazetteer*.)

CARP. [Cyprinus.]

CARPATHIAN MOUNTAINS. [Europe; Transylvania.]

CARPEL. If the fruit of a pæony is examined, it will be found to consist of two or more hollow bodies terminated by a stigma, and containing vegetable eggs, or ovules; taken collectively, these are called a pistil, but each separate body is a carpel. A carpel is theoretically a transformed leaf, with its edges brought into contact, united, and generating ovules at the inside of the suture, while its mid rib is lengthened and distended as a stigma.

CARPENTARIA, GULF OF. [Australia.]

CARPENTRAS. [Vaucluse.]

CARPENTER, DR. LANT, was born Sept. 2, 1780, at Kidderminster. In consequence of his father's failure in business, he was at an early age adopted by Mr. Pearsall, a relation of his mother. His school-education was received partly under the Rev. Robert Gentleman, minister of the congregation to which Mr. Pearsall belonged; partly under the Rev. W. Blake, at Kidderminster; and partly under his uncle, the Rev. B. Carpenter of Stourbridge. Being designed for the ministry, he was sent in 1797 to the academy at Northampton,

which still exists in London under the designation of Coward College. But about a year after Lant Carpenter entered it the establishment was for a time broken up, and he finished his academical career at the University of Glasgow, though he was obliged to leave it in 1801, which was too soon to take a degree. On leaving college he was engaged as assistant in a school at Birmingham; he was next one of the librarians of the Athenæum at Liverpool, and in 1805 became one of the ministers of the Unitarian congregation at Exeter. About this time he married. In 1806 he applied for the degree of M.A. to the University of Glasgow, and the senate sent him instead the degree of LL.D.

While at Exeter, Dr. Carpenter took an active part in promoting the establishment of public libraries, savings' banks, schools, and other institutions for the benefit of the city.

In 1817 he removed to Bristol, as one of the ministers of the Unitarian congregation there. Here also he interested himself in all public matters for the improvement of the people.

These various exertions, combined with his ministerial duties and the preparation of his numerous publications, were too much for his strength. In the summer of 1826 a long and painful season of weakness and depression ensued. He resigned his pastorship at Bristol, and travelled in England and on the continent; by which his health and spirits were gradually restored. At the beginning of 1829 he resumed his ministry at Bristol, but in 1839 his health once more gave way. He was again recommended to travel, and, while going in a steam-boat from Naples to Leghorn, he fell overboard and was drowned, April 5, 1840.

Dr. Carpenter was an industrious and useful writer. His publications, including those which were posthumous, amounted to forty-four. They were chiefly theological and educational, many of which were popular, and held in great esteem. He was also a contributor to the Cyclopædias of Rees and of Nicholson, and to several periodical works.

CARPENTRY is the art of framing timber generally, and as a branch of the art of building embraces the framing of partitions, floors, and roofs. The neater wood-work of doors, window-frames, the planking of floors, skirtings, and stairs, more properly belong to JOINERY.

Carpentry requires a knowledge of the properties of timber, and of its strength when exposed to various strains. [MATERIALS, STRENGTH OF.] This will teach the peculiar fitness of each kind of timber for its own peculiar purpose. It will show, for example, that while oak greatly exceeds fir in hardness and durability, it may be inferior to it under certain circumstances; because, while the fibres of a sawn beam of fir are so straight as to run in unbroken lines from end to end, those of a sawn beam of oak are often so tortuous as to be repeatedly divided by the saw. Seasoning, by long exposure to a current of air, is necessary to prepare timber for use in carpentry; but as the best seasoning will not entirely prevent subsequent warping, shrinking, and splitting or flying, timbers should be so fitted together as to counteract as far as may be the effect of such changes. When it is required to bend timbers, they may be softened by boiling or steaming, and then brought to and secured at the desired curvature, which, when cold and dry, they will retain with very little variation.

Illustrations, more practically useful than any mere outline or theory, of the principles of carpentry, are given in such articles as FLOOR, ROOF, SCAFFOLDING, and TRUSSING; and the thoughtful reader will find no difficulty in tracing the application of the same principles in the framing of partitions and other kinds of carpentry. The method of joining timbers *longitudinally*, where single beams are too small for the purpose required, is treated of under SCARFING.

Among the best works on the science of carpentry may be mentioned Robison's articles in the 'Encyclopædia Britannica,' republished in his 'System of Mechanical Philosophy;' the numerous practical writings of Peter Nicholson; and Tredgold's 'Elementary Principles of Carpentry.'

CARPET. The following kinds of carpets are now made in Great Britain:—Axminster, Venetian, Kidderminster or Scotch, British or damask Venetian, Brussels, and Wilton or Pile carpeting. These names do not always denote either the present or original place of manufacture. Brussels carpets were introduced into Kidderminster from Tournay in 1745; and it is doubtful whether Venetians were ever made at Venice. Wiltons (which are in fact Brussels carpets) were made on the continent before they were introduced at Wilton; and what are called Kidderminster are made in the greatest quantities in Scotland or Yorkshire.

Axminster Carpets are usually made in one piece, according to the dimensions of the room for which they are required. The warp or chain is of strong linen, placed perpendicularly between two rolls, or beams which turn round and enable the chain to be rolled from off one beam and on to the other as the weaving of the carpet proceeds. Small tufts or bunches of different-coloured worsted or woollen are tied to or fastened under the warp; and when one row of these tufts has been completed, the shoot of linen is also thrown in and firmly rammed down. Another row of tufts is then arranged in such a manner as, by a change of the colours, to form a further portion of the pattern. To guide the weaver as to the position of the colours, a small paper design or drawing constantly hangs before him, from which he works. The tufts wholly conceal the linen threads. Real Turkey carpets are manufactured in a similar manner, and they are regularly imported, though not in very large quantities. Finger or Town-made and Stormont rugs are also formed with tufts put in as they are in Axminster carpets, but with a different arrangement of apparatus.

Venetian Carpets.—Here the warp or chain, which is of worsted, and generally arranged in stripes of different colours, is alone visible; the shoot, which is of a dark colour and usually black, is concealed between the upper and under surface. By using shoot of different sizes these carpets are sometimes made to assume the appearance of plaids, checks, or twills.

Kidderminster or *Scotch Carpets* are formed by the intersection of two or more cloths of different colours; but as these cloths may be woven in stripes of different shades, by introducing at intervals shoot of different colours, the carpet is usually made to assume a great variety of colours. These carpets are sometimes 'three-ply,' or have three thicknesses of cloth; but for the most part they are 'two-ply.' Each cloth is perfect in itself, so that, if one cloth were carefully cut away, the other would remain perfect, and be in appearance like a very coarse baize. The process of weaving both cloths is carried on at the same time, and in each part of the carpet that cloth is brought to the surface which is required to produce that portion of the pattern. The back of the carpet will necessarily be of exactly the same pattern as the front, but the colours will be reversed. A complicated variety of the jacquard loom is employed in weaving these carpets.

British or *damask Venetian Carpets* partake both of the character of Venetian and Kidderminster, though more of the former than the latter. The warp, as in the Venetian, is the only part seen, whereas in Kidderminsters the shoot forms by far the greatest portion of what is visible.

Brussels Carpets form by far the most important and increasing portion of the carpet trade. Brussels are composed of linen and worsted, the cloth or reticulated part of the structure being entirely of linen, which is formed into a kind of very coarse sampler cloth, with two threads of linen for the shoot (one above, and the other below the worsted). The mode of bringing up to the surface the particular worsted thread which gives the pattern requires much ingenuity in the arrangement of the Brussels loom.

Wilton or *Pile Carpets* differ from Brussels only in this: that the loops of worsted are all cut through, and the carpet assumes a velvety appearance. At Glasgow a beautiful kind of velvet carpet is manufactured, in which coloured chenille is thrown in as a shoot, and afterwards cut at the surface. The manufacture of Brussels carpet was introduced into Wilton soon after its introduction into Kidderminster: the Wilton carpets, being originally a better description of goods, were distinguished by the name of Cut or Wilton Carpets.

The chief export trade for carpets is to the United States of America; but they are also sent to most parts of the continents of Europe and America. By far the greatest quantity of Brussels is made in Kidderminster: what are called Kidderminster or Scotch are made in the largest quantities in different parts of Scotland and the north of England.

CARPI, UGO DA, a celebrated old Italian wood-engraver, who lived in the early part of the sixteenth century, and has the credit in Italy of having been the inventor of printing in light and shade with wooden blocks. Scarcely a circumstance of his life is known beyond the above. He seems to have lived chiefly at Modena. He was also a painter, but only one of his pictures is recorded, St. Veronica between St. Peter and St. Paul, painted without a brush, which is still preserved in the sacristy of St. Peter's at Rome.

It is difficult to identify the cuts of Carpi, because Adreani and Antonio da Trento engraved in a similar style, and also published many prints without their names. Ugo's prints are scarce, and nearly all after Raphael and Parmegiano. They are generally well drawn, and executed with perfect understanding of the light and shade: the earliest date upon them is 1518.

CARPINI, JOHANNES DE PLANO. Little is known of Carpini except through his own account of his travels; but the probabilities are that he was born in the province of Capitanata, in the kingdom of Naples (Piano di Carpino), about A.D. 1210. He became a friar of the order of St. Francis, or of the Minorites, and in 1246, when Europe was thrown into consternation by the irruptions of the Mongols, who had ravaged Hungary, and other countries, he and one Benedict, a companion of the same order, were sent by Pope Innocent IV. as legates to those barbarians, to pacify and if possible to convert them. These two friars were instructed to take their route through Bohemia, Poland, and Russia, and then by the north of the Caspian Sea. The most fearful accounts prevailed of the ferocity and indomitable courage of these Asiatic invaders. But the intrepid monks were not deterred by any prospect of danger. In Lithuania they ran some risk of being murdered; but in Russia they were upon the whole hospitably and kindly entertained. The Mongols at this time occupied all the country between China, Siberia, and the Caspian Sea, the van of this nomadic pastoral army being on the river Dnieper, and its rear under the great wall of China. The subordinate khans or chiefs passed the two monks onward from post to post until they came to the head-quarters of the great Baatu. These posts were far apart. The country where Baatu had his camp (called by the travellers Comania) was far beyond the Caspian Sea. But their toils were not yet over: Baatu ordered them to proceed to the court of his sovereign, the Khan of Khans and Emperor of all Men. They must have found the Emperor or Great Khan somewhere to the north of the sandy desert which spreads itself between the Great Wall and Tartary, as there is no mention made of their travelling on camels, or of their entering upon that desert. The monks complain that, during their stay there, which continued a whole month, they were in such extreme distress for victuals and drink that they could hardly keep themselves alive. At last, on the feast of St. Brice (the 13th of November, 1247), they received permission to depart from this inhospitable court. On the 9th of June, 1248, they reached Kiew, where their Russian friends joyfully received them. They had passed in all sixteen months entirely among the Mongols and the people that had been conquered by them. Allowance being made for the state of geography and other sciences, and for the condition and superstitions of the time, the account which Carpini or his friends gave to the world was an admirable little book of travels.

It appears that Friar John returned to Italy, and that there, with some assistants, he published his plain unvarnished account of his travels, in a

small book, in Latin. This books seems to be known solely through the 'Speculum Historiale' of Vincentius Belvacensis. From the 'Speculum Historiale' Ramusio transferred all this matter, together with an Italian translation to follow the Latin text, into the second volume of his 'Raccolta di Navigazioni e Viaggi,' which was printed by the Giunti at Venice, in the year 1556. From this admirable work of Ramusio our own good compiler Richard Hakluyt, copied the matter into the first volume of this 'Navigations and Discoveries,' which was published in London towards the close of Queen Elizabeth's reign, in the year 1599. From Ramusio or from Hakluyt all modern and indeed all existing accounts of Carpini and Friar Benedict have been drawn. A somewhat modernised translation of the Latin text of Hakluyt is given in R. Kerr's 'History and Collections of Voyages and Travels,' Edinburgh, 1824.

Nothing further is known of the life or the death of Carpini, though a writer in the 'Biographie Universel' says that it appears that after his return from Tartary he devoted his life to the missions in the north of Europe, preached the gospel in Bohemia, Hungary, Norway, and Denmark, and died at an advanced age.

CARPI'NUS, the Hornbeam, a genus of trees belonging to the natural order of *Cupuliferæ*. Four species are known—*C. betulus, C. Americana, C. orientalis, and C. viminea.*

C. betulus, or common Hornbeam, is an indigenous British tree very common in copses, and frequently pollarded by the farmer. Its wood is coarse, and unfit for cabinet-maker's work, on account of the large size of its medullary processes; but it is tough, and well suited for cogs, handles of tools, and for other purposes in which strength is required. It is much consumed on the continent as fuel.

CARPOBA'LSAMUM, a kind of volatile aromatic oil, said by Bruce to be furnished by the *Balsamodendron Gileadense*. It is produced by the nuts, which have a fleshy kernel yielding the balsam by simple expression. It should be employed while recent, otherwise it loses its odour and becomes inert.

CARPOLOGY is a division of botany comprehending what relates to the structure of seeds and their seed-vessels, or what is commonly called fruit.

CARR, JOHN, an English architect, was born in 1721, at Horbury, near Wakefield, Yorkshire. His practice was very considerable in Yorkshire and the adjoining counties, where he erected several stately mansions, and other buildings both public and private. He was twice lord mayor of York, in 1770 and 1785, and realised a handsome fortune. He died at his residence, Askam Hall, Yorkshire, Feb. 22, 1807. Carr belonged to the Anglo-Palladian school. Among his principal works are the Town Hall at Newark, Notts; the Crescent at Buxton; Harewood House, Yorkshire, one of his best mansions, and the splendid Mausoleum of the Marquis of Rockingham at Wentworth.

CARRAGEEN MOSS. [SEA-WEEDS.]

CARRA'RA and MASSA, two contiguous territories lying on the south side of the Apennines, and belonging to the Duke of Modena.

The principality of Carrara consists of about 30 square miles, mostly mountainous, but well cultivated, and with a population of 12,000. It is bounded on the N. by the territory of Fivizzano, E. by the duchy of Massa, S. and S.W. by the Mediterranean, and W. and N.W. by the province of Lunigiana, which, partly belongs to Sardinia, and partly to Modena. It extends about 8 miles from the sea to the summit of the Monte Sagro, which is 5540 feet high, being one of the principal summits of the Alpe Apuana, a group of the Ligurian Apennines. From the south side of Monte Sagro to the southwest extend several lower projections, separated from each other by narrow valleys that are drained by the feeders of the Carrone, which flows by Avenza into the sea, about 4 miles below Carrara. These lower ridges furnish the well-known white marble of Carrara. The various streams turn a number of mills for sawing the marble. The blocks are carried down in carts and stored at Avenza, whence the marble is shipped. The town of Carrara has 4500 inhabitants, who are chiefly employed in the marble quarries and works. There is in the town an academy of drawing and sculpture, several schools, and the civil and criminal courts for the two territories. Many foreign artists repair to Carrara for the sake of purchasing the blocks which they require for their works, and which are roughhewn on the spot. Avenza, the second town of the principality of Carrara, has 2000 inhabitants. There are besides ten other villages with from 200 to 900 inhabitants each. The principal agricultural produce is oil and wine; the corn raised on the territory is not sufficient for the consumption. The mountains are covered with chestnut and beech trees, and with pastures.

The duchy of Massa lies between Carrara and Lucca, which now belongs to Tuscany. Its length from the sea to the Alpe Apuana is 8 miles, and its breadth about 6. The population is about 10,000. The chief town, Massa, is a neat town on the Frigido, which is crossed by a handsome marble bridge. It is the seat of a bishop, and the residence of the governor; has a cathedral, town-house, public gardens, and a court of appeal for Massa and Carrara. Massa is on the road from Genoa to Pisa, and has about 7000 inhabitants.

(Repetti, *Dizionario Geografico della Toscana.*)

CARRA'RA, DA, the name of an historical family of Italy, which held sovereign sway over Padua and the neighbouring provinces during the middle ages. Like most of the north Italian nobility of that period, the Carrara appear to have been of Longobard origin.

CARRICK. [AYRSHIRE.]

CARRICK-ON-SUIR. [TIPPERARY.]

CARRICKFERGUS. [ANTRIM.]

CARRIER, one who for hire undertakes the conveyance of goods or persons for any one who employs him. In a legal sense, it extends not only to those who convey goods by land, but also to the owners and masters of ships, mail-con-

tractors, and even to wharfingers who undertake to convey goods for hire from their wharfs to the vessel in their own lighters, but not to mere hackney coachmen.

By ancient custom (which, being acknowledged by judicial decision, becomes law), a common carrier of goods for hire is not only bound to take goods tendered to him, if he has room in his conveyance, and he is informed of their quality and value, but he is liable for their loss, except in three cases:—1, Loss arising from the king's *public* enemies; 2, Loss arising from the act of God, such as storm, lightning, or tempest; 3, Loss arising from the owner's own fault, as by imperfect packing.

In order to settle disputes as to loss and injury between carriers and persons whose property they carried, 11 Geo. IV. and 1 Will. IV. c. 68 was passed, by which it is enacted that no common carrier by *land* shall be liable for the loss of or injury to certain articles, particularly enumerated in the act, contained in any package which shall have been delivered, either to be carried for hire, or to accompany a passenger, when the value of such article shall exceed 10*l.*, unless, at the time of the delivery of the package to the carrier, the value and nature of such article shall have been explicitly declared. In such case the carrier may demand an increased rate of charge, a table of which increased rates must be affixed in legible characters in some public and conspicuous part of the receiving office; and all persons who send goods are bound by such notice, without further proof of the same having come to their knowledge.

A carrier can refuse to deliver up goods which have come into his possession *as a carrier*, until his reasonable charges for the carriage are paid.

CARRON. [STIRLINGSHIRE.]

CARRONADES are short iron guns, differing from other guns, and from howitzers, only in their dimensions and in the manner of attaching them to their carriages, which is by a joint and bolt underneath the piece, instead of trunnions. They derive their name from the village of Carron, in Stirlingshire, where they were first made.

When fired at point blank, their range is about 150 yards; and, at an elevation of 3 degrees, it varies from 660 to 750 yards. They are extremely serviceable on land for breaching ramparts of earth, or for enfilading the faces of works; and at sea, in engagements at close quarters.

For the dimensions and weights of carronades, see Spearman's *British Gunner*.

CARROT. The principal use of carrots is as food for cattle. The orange carrot and its varieties are the most common in England; but the large white and yellow carrots are more esteemed on the *continent*; they are supposed to contain more saccharine matter, and to produce a greater bulk of nutriment on the same extent of ground. The white carrot will also grow on heavier soils than the orange, and may be sown in spring amongst barley, in the same manner as clover usually is; with this difference, that the roots are taken up before winter, and the land may be sown with winter corn the same year. This is commonly practised in Belgium.

When carrots are cultivated in a regular rotation as a principal crop, they are sown in March on land which has been ploughed to a considerable depth before winter, and has had the benefit of the winter's frost. It is not usual to manure the land, but it is best to sow carrots on land which has been abundantly manured for the preceding crop. The best mode of cultivation is to have the land in a moderately rich state and thoroughly pulverised; to sow the seed in drills, at the distance of a foot or more from row to row; to cover it slightly, and, as the plants appear, to water them with diluted urine or the drainings of dunghills; to destroy all weeds carefully by the hand and the hoe, and to thin the plants in the rows to the distance of five or six inches or more, according to the richness and depth of the soil. Two pounds of seed are sufficient for an acre, if the seed is drilled; it requires double the quantity if sown broad-cast.

The best method of taking up the carrots, to store them for winter use, is by means of three-pronged forks, such as are used in digging asparagus beds. The plough is sometimes used after the coulter has been removed; but, with all the care of the ploughman, the plough and the horses will cut and bruise many of the finest carrots. Carrots may be kept all winter in dry cellars, if they are protected against the frost. The more common way is to store them in straw in long trenches. The produce of carrots on good light land is nearly double that of potatoes, and they do not impoverish the land so much. From twenty to forty pounds of carrots, with a small quantity of oats, is a sufficient allowance for a hard-working horse for twenty-four hours. Where hay is scarce, it is a most economical substitute; and where the value of urine is known carrots are much prized, as they greatly tend to its increase.

If carrots are cut in pieces and steamed, they become more nutritious, and the expressed juice made to ferment affords by distillation a very good and wholesome spirit. Sugar may also be extracted; but the carrot is inferior to the beet in this respect.

For garden purposes there are three principal varieties of carrot; namely, the Early Horn carrot, a small kind used for the earliest crops; the Long Orange, or Altringham carrot, a very large kind, for ordinary summer and winter use; and the Purple carrot, a French sort, remarkable for its deep purple colour and unusual sweetness. The last is not so much known as it deserves to be; the two others are in common use.

CARSTARES, WILLIAM, a Scottish ecclesiastic, was born at Cathcart, near Glasgow, Feb. 11, 1649. William Carstares studied in the University of Edinburgh, and became not only an accomplished scholar, but an accurate observer of men. During the latter end of the reign of Charles II. he lived in Holland, and studied theology at Utrecht, where he is supposed to have taken orders. Accident introduced him to the notice of the pensionary Fagel, who recommended him to his master, the Prince of Orange, afterwards William III., who adopted young Carstares as one of his confidential ad-

visers, and events justified the selection. The time of his return to Britain is not precisely known. He was in London in 1682, and was more or less connected with all the projects and asserted conspiracies of the time, and was probably the medium of communication between the court of Holland and some of the parties who were prepared for insurrection both in England and Scotland. He was at length arrested in England, and on suing out his habeas corpus the effect of it was defeated by sending him into Scotland, where he was examined in reference to these assumed plots; but, though subjected to the torture of the thumb-screw, he revealed nothing, and was afterwards released. He returned to Holland, and was warmly received by the prince. He was subsequently of great service in producing a reconciliation between the Scottish Presbyterians and William III., who could not precisely understand the pertinacity with which his northern subjects adhered to the principle of spiritual independence. He became now virtually prime minister for Scotland, and, even after the death of William, his knowledge of Scottish affairs, and the respect paid to his talents, left him with considerable influence. In 1704 he was chosen Principal of the University of Edinburgh. He died Dec. 28, 1715.

CARSTENS, ASMUS JACOB, a distinguished German artist, was born at St. Gürgen, near Schleswig, May 10th, 1754. His father was a miller; but his mother had been well educated, and was therefore able to bring up her three sons in a manner very superior to what the circumstances of the family would otherwise have allowed. Carstens' father died when he was about nine years old, and he was sent to the public school at Schleswig, where the pictures in the cathedral excited his intense admiration, and he desired to be a painter. His mother acceded to his wishes when he was about sixteen, but the sum required to place him with any artist of eminence was too great for their means. His mother died soon afterwards, and his guardians, in spite of his entreaties, placed him with a wine-merchant at Eckernforde. Here he employed the whole of his leisure time, and frequently a considerable portion of the night, in drawing. About this time, too, Carstens renewed an acquaintance with Ipsen, a young painter, from whose instructions he obtained some insight into the management of colours and other technical matters. Having served five years, he went to Copenhagen, where he again met with Ipsen, who procured for him free access to the Royal Gallery of Paintings, and to the collection of casts and antiques at the academy. While in Copenhagen he produced his 'Balder's Death' and 'Æolus and Ulysses,' compositions that excited much notice. In the spring of 1783, Carstens, his younger brother (who had been studying painting at Schleswig), and Busch, a sculptor, determined to proceed to Rome. Carstens and his brother travelled on foot as far as Mantua, their companion having parted from them at Nürnberg. After passing an entire month at Mantua, Carstens found that they must abandon their plan, and return homewards. They reached Lübeck, where Carstens resumed his former occupation of portrait-painting, which he pursued for nearly five years; but he employed all the time not so occupied in making historical and poetical compositions. He also now began to read diligently. At the end of that time he accepted the offer of Rodde, a wealthy amateur, who furnished him with the means of visiting Berlin.

In Berlin he was at first subjected to some pecuniary difficulties; but at length his 'Fall of the Angels,' a composition containing upwards of 200 figures, obtained for him an appointment as one of the professors at the academy. Soon afterwards, having decorated the walls of a saloon in the Dorville palace, for the minister Von Heinitz, Carstens was introduced to the king, from whom he received a travelling pension, and in the summer of 1792 he again set out for Rome. He studied with great perseverance, and when the two years, to which his stay at Rome was limited, had expired, he begged hard for an extension of the term, as he was preparing to make a public exhibition of the subjects which he had produced while in Italy. His exhibition was opened in April 1795, and consisted of eleven subjects, mostly poetical and mythological. None of these compositions were oil pictures, for Carstens was aware that colouring was not his forte. The result proved his foresight: both in style and subject these works were an earnest of powers as superior as they were uncommon. The same year he sent three compositions to Berlin, whereupon he was again urged to return to his post in the academy; but he declined. In the course of the two following years he produced many fine compositions, including a series of twenty-four subjects from Pindar, Orpheus, and Apollonius Rhodius, all of them illustrative of the Argonautic expedition. This series it was his intention to etch himself; but in the autumn of 1797 he was attacked by a serious malady, and expired on May 25, 1798.

CART. The drag-cart without wheels, which is used in some mountainous districts, is one of the simplest contrivances for transporting heavy weights. It consists of two strong poles, connected by cross pieces fixed at right angles to them, the ends resting on the ground. The other ends of the poles form the shafts for the horse to draw by. The Irish car may be considered as the next step towards a better construction. This car consists of a bed or platform and two shafts. The wheels, in the simplest form, are round disks of wood, fixed on a square axle of wood at the distance of three or four feet from each other. To the under part of the bed of the cart two blocks of wood are fixed, which raise it so that the wheels may go under the cart, and in these blocks are two round holes to admit the ends of the axle. This is the simple old Irish car. The only difference in the construction of the most improved modern cars is the substitution of neat wheels and iron axles for those described above, and a railing or box fixed on the platform.

The common cart differs from the car in that the body rests on a fixed axle between the wheels, which turn upon the axle by means of boxes in

the centre of the naves. The simplest cart is that used by carriers in France and Germany. It consists of two strong poles of ash or beech, resembling those of the drag-cart described above. One end forms the shafts, and the whole is equally poised on the axle. The wheels are often nearly six feet in diameter, and narrow at the tire; they are slightly dished, but run nearly perpendicularly to the road. On these carts very great weights are transported, so as to require five or six horses to draw them. Where the roads are level and hard, waggons are much to be preferred to carts; but in hilly countries and bad roads carts have many advantages. For agricultural purposes various kinds of carts have been invented. The capacious tumbril for carting earth and dung, with broad wheels to prevent their sinking in soft ground, is too generally known to require description. The light Scotch cart, drawn by one horse, is justly considered as the most advantageous for transporting earth, lime, or dung, especially in hilly countries. It is low and short, so that the horse draws very near the centre of gravity; and there is little power lost by obliquity. It is made to carry hay and straw by means of a light frame, which is laid on it, and projects over the body and the wheels in every direction.

To avoid the weight resting on the back of the horse, carts have been invented with three wheels, the small additional wheel being made to turn in front. The addition of springs to carts and waggons is a very great improvement, and should be adopted in every case where they are much used on the roads. The additional weight of the springs and their cost are greatly overbalanced by their advantage: they lessen the draught, and, by preventing jolting and shaking, add to the durability of the vehicles.

CARTAGE'NA, *Carthago Nova*, of the Romans, a seaport on the Mediterranean, in the province of Murcia in Spain, in 37° 36′ N. lat., and 1° W. long. It is said to have been built by Hasdrubal Barcas, who gave it the name of New Carthage. The Romans after their conquest of Spain sent a colony to it, and called it Julia Nova Carthago. It now forms with its territory a district of the province of Murcia. Cartagena is one of the three naval stations of Spain: it has a royal dock-yard, a fine basin, a gun wharf, a castle, and a bagnio for the galley slaves. The harbour is one of the best in all Spain. It has 30 feet water close under the walls of the town. It is defended by batteries at the entrance, and by several forts and redoubts on the surrounding hills. The town is regularly built, and has some good streets and buildings, four parishes, and 29,000 inhabitants, including the suburbs. (Miñano, 'Diccionario Geografico de España.') It has been however for more than half a century past in a state of decay, owing to the political troubles and the interruption of its trade with the Spanish-American colonies. It has some manufactories of cloth for sails, of cables and ropes, and other articles for shipping. The country around produces corn, wine, oil, and barilla. In the neighbouring mountains are mines of lead.

CARTAGENA, a seaport in the republic of New Granada, on the northern shore of South America, in 10° 25′ 48″ N. lat., and 75° 30′ W. long., about 50 miles from the mouth of the Rio Maddelena. Population 16,000. The harbour of Cartagena is one of the safest and most convenient in all America. It is formed by two islands extending along the coast S. and N. The entrance is so narrow that only one vessel can enter at once. The harbour itself is about 6 miles long, and from 2 to 4 broad. It is deep, has good anchorage, and its surface is as smooth as that of a river. The town is situated on the northern island, and N. of the harbour, on a sandy tract of land. To the east of the town is another low island, on which the suburb of Gimani stands: both are connected by a wooden bridge. Another bridge unites the suburb with the main land. The town is regularly built, with straight but rather narrow streets, and houses constructed with balconies in the Spanish style. It is well fortified; but it is commanded by a hill called Popa, which is not fortified, and on which a convent stands. Among the public buildings are immense cisterns for preserving rain-water, as the spring water is bad. Owing to the great heats and the moisture, the climate is unhealthy: the yellow fever often makes great ravages. Since the revolution in South America the commerce of this town is limited to exporting the produce of the valley of the Rio Maddelena, and importing the manufactured goods, which are consumed in it. (Juan and Ulloa's *Travels;* Humboldt and Mollien.)

CARTE, THOMAS, was born in April 1686, at Clifton, in Warwickshire. He matriculated at Oxford, but he took his degree of master of arts at Cambridge, and afterwards entered into holy orders.

On the accession of George I., Carte, who was in favour of the Stuarts, declined to take the oaths of allegiance, and therefore abandoned his clerical preferment: in 1715 he was obliged to conceal himself; and in 1722, while secretary to Bishop Atterbury, he fled to France, where he resided nearly twelve years. He died near Abingdon, in 1754.

So far as great labour and indefatigable research constitute an historian, Carte may lay claim to that character. His works consist of an edition of 'Thuanus' in 7 vols. fol.; a 'Life of James, Duke of Ormonde,' in 3 vols. fol.; and 4 vols. fol. of the 'History of England,' bringing it down to the year 1654. He likewise published at Paris a Catalogue, in French, of the Gascon, Norman, and French Rolls, preserved in the Tower of London.

CARTE-BLANCHE (literally, white card) is a paper signed and, if necessary, sealed by the party against whom it is to be used, but (with the exception of the signature and seal) blank, in order that it may be filled up with such condition as the party to whom it is delivered may prescribe. Thus, when Charles I. was about to be condemned, his son, Prince Charles, sent to the parliament a blank paper signed and sealed by himself, in order that they might dictate their own terms for saving his father's life.

The term is often used to express an unre-

stricted authority delegated by one man to another: thus a general is said to have carte-blanche from his sovereign when he has leave to carry on the warfare at his own discretion.

CARTER, ELIZABETH, was the daughter of Dr. Nicholas Carter, an eminent Latin, Greek, and Hebrew scholar, and perpetual curate of Deal in Kent, where his daughter Elizabeth was born December 16th, 1717. Elizabeth was educated by her father. She made rapid progress in the learned languages, to which she added Italian, German, Spanish, and French. Her proficiency in these studies did not lead her to neglect female accomplishments. In 1738 she published some poems in a thin 4to. volume. In the same year she translated from the Italian of Algarotti, 'An Explanation of Newton's Philosophy, for the use of Ladies, in Six Dialogues on Sight and Colours.' These publications, appearing before their author was twenty-two, gave her immediate celebrity, and brought her into correspondence with most of the learned persons of that day. In the midst of her literary occupations, she educated her youngest brother for the university. During her intervals of leisure she translated Epictetus for the amusement of her friend Miss Talbot, and it was finally published in compliance with the wishes of her friends. This learned lady was never married. She died in 1806. (Pennington's *Memoirs.*)

CARTES, DES. [DES CARTES.]

CARTHAGE, MAGNA CARTHA'GO, called by the Greeks *Carchédon*, an ancient city and state, long the rival of Rome, was a colony of the Tyrians, and was built, according to tradition, about 100 years before Rome. There seems to have been an older Phœnician settlement on the spot, which, according to Appian and others, was founded before the siege of Troy, and hence much confusion has arisen concerning the age of Carthage.

Of the early history of Carthage during more than three centuries we know little. What we know of its institutions is derived chiefly from a chapter in Aristotle's 'Politics,' in which he speaks of its government as one of the best constituted in his time.

The city of Carthage ruled over all the rest of the country. The constitution was an aristocracy. The chief authority was vested in the senate. It was not an exclusive aristocracy, nor essentially hereditary, but was recruited out of the class of the more wealthy citizens, or those who had rendered services to the state. The senators appear to have been for life. The senate contained within itself a select body or council of state, which the Greek writers call Gerúsia. Aristotle ('Politica,' ii. 20) says the Carthaginians had a body of 104 magistrates, similar to the Ephori of Sparta, but selected from among the most worthy; and that the kings and the Gerusia of Carthage resembled the kings and the Gerusia of Sparta in their respective offices. The Carthaginian Gerusia is said, by some writers, to have consisted of 100 members. This 'Council of the Hundred' is also mentioned by Aristotle as forming the highest magistracy, and deciding all causes. It was probably the same as the 'Council of 104.'

Two Suffétes, whom the Greek and Roman writers call kings, appear to have been at the head of the executive; they presided in the senate. Aristotle says that the main difference between them and the kings of Sparta was that the office of the former depended upon election, while that of the kings of Sparta was hereditary in two families. The election of the generals and foreign governors, which were the next offices to that of suffete, took place in the Gerusia, but was afterwards referred to the senate and the people for their approbation. A suffete was at times general also, and as such headed the armies of the Republic, while his colleague remained at home. The generals, called stratégoi by the Greek historians, were distinct from the boetharchs, or civil governors. When the senate and the suffetes could not agree upon some particular points, the question was referred to the people or citizens at large for their decision. The magistrates were either elected by the people or proposed by the senate, and approved by the people; and Aristotle observes that bribery was resorted to, and that offices were bought and sold at Carthage. Aristotle speaks of dinners given by various societies, probably like our clubs, in which political questions were discussed. Aristotle observes that in the choice of magistrates the qualities required were their wealth, their personal character and merits, and their popularity, which shows that the people had a real power in the elections. The constitution of Carthage probably resembled that of Venice previous to the great council or patrician body of the latter republic being made exclusive and necessarily hereditary, by the Doge Gradenigo in 1297, by the famous decree called 'La Serrata del Maggior Consiglio.' We may gather from Polybius, Appian, and others, that conjugal and parental feelings were strong among the Carthaginians. Their religion or mode of worship, which was originally gloomy and cruel, they derived from Phœnicia. Melcarth, 'king of the city,' was their tutelar deity, and was perhaps the same as the Melec or Moloch, to whom they immolated the children of the noblest families to propitiate his wrath, until the cruel practice was abolished by the treaty with Gelon of Syracuse. Astaroth or Astarte, the goddess of the moon, was another of their deities. We hear of no sacerdotal caste possessing exclusive influence at Carthage. This subject has been investigated by the late Dr. Münter, bishop of Zealand, in Denmark, in his 'Religion der Karthager,' Copenhagen, 1821.

The country in the neighbourhood of Carthage, and indeed all that tract which formed its real territory, and which corresponds to the present state of Tunis, was well cultivated. Mago, a suffete of Carthage, who is supposed by some to be the same as the head of the powerful family of that name, who flourished about 550 B.C., wrote a work on agriculture in 28 books, which is the only work mentioned as having been carried away by the Romans out of the libraries of Carthage when they destroyed that city, and which was translated by D. Silanus, but is unfortunately lost. Varro, Pliny, and other Roman writers have bor-

rowed considerably from this work, which they quote with great praise. The Carthaginians derived their public revenue from the taxes paid by the provinces. (Polybius.)

The Carthaginians at an early period took possession of the smaller islands near their own coasts, such as Melita or Malta, Gozo, Lampedosa, and afterwards of the Balearic and the Lipari Islands. The Baleares produced wine, oil, and fine wool, and Malta was celebrated for its cloth manufactures.

The intercourse of the Carthaginians with their mother-country, Tyre seems to have been closely maintained. Their policy and their old enmity towards the Greeks led them to enter into correspondence with the Persian kings, especially at the time when Darius and Xerxes invaded Greece. They also joined the Etruscans at an early period against the Phocæans, who had settled in Corsica, and afterwards the Ligurians against the Phocæan colony of Massalia (Marseille), by which however they were defeated at sea, and precluded from forming establishments on the coast of Gaul.

The real territory of Carthage seems to have extended southwards as far as the lake Tritónis, and westward not much beyond the frontiers of the present state of Tunis, for Cirta, the modern Constantina, was the capital of an independent Numidian kingdom. But, even in the tract of territory which may be considered as belonging to Carthage, there were along the coast several old Phœnician colonies, such as Utica, Leptis, Hippo, Hadrumétum, which appear to have stood in the relation of allies to Carthage, retaining their municipal independence. But the political influence, and indirect sway of Carthage extended much farther inland over many tributary native chiefs; and it had settlements all along the north African coast, eastwards as far as the boundary of Cyréne, and westwards as far as the Pillars of Hercules, on the Straits of Gibraltar.

Sardinia was probably the first foreign conquest of Carthage. Hasdrubal, the son of Mago, fell in battle in Sardinia; but his brother Hamilcar reduced part of the island, where the Carthaginians built the colonies of Cáralis (Cagliari) and Sulci. About 480 B.C. Hamilcar was sent to Sicily with a great force, but he was totally defeated by Gelon, the tyrant of Syracuse, B.C. 480. There was after this a period of 70 years of peace, during which Carthage seems to have reached the highest point of its commercial prosperity. It was during this time that it sent two fleets to explore the western coasts of Africa and Europe. The first was commanded by Hanno, a suffete, perhaps the Hanno, son of Hamilcar, who had died in Sicily. [HANNO.] The other expedition under Himilco was sent round the coast of Lusitania (Portugal) and northwards as far as the Œstrymnon Cape, which some suppose to be Cape Finisterre. [AVIENUS.] It seems that the Carthaginians had discovered not only the Fortunate or Canary Islands, but Madeira also. (Heeren's 'Researches into the Commerce and Policy of the Carthaginians.')

The second Carthaginian expedition into Sicily took place about 410 B.C. Selinus was taken, plundered, and burnt; and also Himera. The next attack was on Agrigentum, which was also taken

406 B.C. [AGRIGENTUM.] The wars were renewed under Timoleon [TIMOLEON], who made peace with Carthage, by which the territory of the latter state in Sicily was limited to the west extremity of the island, the river Halicus, between Selinus and Lilybæum, forming its eastern boundary. War broke out again between Carthage and Syracuse about 310 B.C., when Agathocles was tyrant of the latter city. The Carthaginians assembled an army in Sicily, and totally defeated Agathocles, 309 B.C., who upon this carried the war into Africa. This was the first deadly thrust at the power of Carthage, whose weak point being thus discovered, the example was afterwards followed by the Romans. [AGATHOCLES.]

The great events in the history of Carthage are the wars with Rome, commonly called the Punic Wars. The first began B.C. 265, and the last terminated in the destruction of Carthage, 146 B.C. By a decree of the Roman senate, the city was rased to the ground. The destruction of this great commercial city was one of the most brutal acts of Roman policy. To Africa the destruction of Carthage was a retrograde step in civilisation, for there was never afterwards a native power in that part of the world that could be compared to Carthage. The Carthaginian colonies beyond the Pillars of Hercules were forgotten, and the key to their discoveries and extensive trade was lost. The literature of Carthage likewise perished; the Romans gave its libraries to their Numidian allies, and we know through Sallust that King Hiempsal had a collection of Carthaginian historians, from which Sallust derived some information on the early history of Africa. Pliny mentions a collection of African chronicles compiled by Juba, and extracted from Punic, Libyan, Greek, and Latin authorities; this work however is lost.

C. Gracchus attempted to establish a colony on the site of Carthage, B.C. 122, but the settlement made little progress until Julius Cæsar, and Augustus after him, sent colonies to build a new town, which was called Colonia Carthago. It stood on the south-east part of the peninsula, between Cape Carthage and Goletta, and occupied a small part of the ground of the old city. It rose however to considerable splendour, and became the first city of Roman Africa. In 439 A.D., it was taken by the Vandals under Genseric; it was retaken by Belisarius in 533; and lastly was destroyed by the Saracens in 698. Thus ended the second Carthage. The existing ruins belong to Roman Carthage; there are no remains of the Tyrian city, except the large cisterns and perhaps the ruins of the great aqueduct. It seems probable that the old Carthage occupied the north part of the peninsula, between Cape Cammart and Cape Carthage, where substructions are still seen under water; and it perhaps extended also to the south-west of Cape Cammart, where the whole appearance of the land has been changed. The gulf between Cape Cammart and the point of Porto Farina went much deeper *inland* than it does now. The alluvia of the Bágradas, and the sands raised up by the north-west winds which prevail on this coast, have filled up this space for several miles. The shape of the peninsula of Carthage is

completely altered; the isthmus, three miles broad, which was formed by the lake of Tunis on one side and the gulf above mentioned on the other, is now obliterated on the latter side by the main land, which has formed itself along side of it, extending north-west to the spot where Scipio's camp once stood. The lower course of the Bagradas is also altered. The remains of Utica are now several miles from the sea-shore. (See the topographic map of Carthage in Shaw's 'Travels.') The most recent and accurate investigation on the site of the Tyrian Carthage is contained in Estrup's 'Lineæ Topographicæ Carthaginis Tyriæ', with a map, 1821. For the commerce and colonies of Carthage, the reader may refer to Heeren's *Researches;* and for its political history, to Böttticher's *Geschichte der Karthager*, 1827.

CARTHAMIN and CARTHAMEIN. The yellow colouring matter of carthamus is to be extracted by water, and it is then to be sprinkled with a very dilute solution of carbonate of soda, which dissolves the carthamin; this is to be precipitated by a salt of lead, and the oxide of lead separated by hydrosulphuric acid. By this treatment a yellow solution is obtained, which by spontaneous evaporation yields small prismatic crystals of pure carthamin. When exposed over mercury to oxygen gas, it becomes after some days merely yellowish; but, if a little alkali be added to it, it becomes immediately yellow, and then passes rapidly to a rose colour. In this state the acids, and particularly citric acid, precipitate it from the alkali in the state of the well-known fine rose colour, which is called by M. Preisser *carthamein*.

Carthamin consists of 26 equivalents of carbon, 9 of hydrogen, and 5 of oxygen, or C^{26} H^{9} O^{5}. Carthamein is composed of 26 carbon, 9 hydrogen, and 7 oxygen, or C^{26} H^{9} O^{7}.

CA'RTHAMUS TINCTO'RIUS, a pretty annual plant, found wild in Egypt and the Levant. The flowers contain a colouring principle called *Carthamin*, which is employed by dyers as the source of some of the more delicate rose colours and the rich scarlet called ponceau. It also constitutes the basis of the cosmetic known by the name of *rouge*.

CARTHUSIANS. The Carthusian monks were a branch of the Benedictines, whose rule, with the addition of a great many austerities, they followed. Bruno, who was born at Cologne in Germany, first instituted the order at Chartreux, in the diocese of Grenoble, in France, about A.D. 1080; whence the monasteries of the order were in England corruptly called *Charter-houses*. The rule of the Carthusians, which is said to have been confirmed by Pope Alexander III. as early as 1174, was the most strict of any of the religious orders, the monks never eating flesh, and being obliged to fast on bread, water, and salt, one day in every week; nor were they permitted to go out of the bounds of their monasteries, except their priors and procurators, or proctors, and they only upon the necessary affairs of the respective houses.

The Carthusians were brought into England in 1180 or 1181, by King Henry II., almost as early as their establishment at Grenoble. Their habit was all white, except an outward plaited cloak, which was black. In England there were but nine houses of this order.

(*Histoire des Ordres Monastiques;* Tanner, *Notit. Monast.;* Dugdale's *Monasticon.*)

CARTILAGE, commonly called gristle, a substance intermediate in density between the membranous and bony structure of the body. It is distinguished from every other texture by its pearly whiteness, its smoothness, its firmness, and its great elasticity.

The simplest form of cartilage consists merely of nucleated cells, and closely resembles the cellular tissue of plants. This kind is found in the rudimentary spinal column of the early embryo; it also exists in the chorda dorsalis of the cartilaginous fishes. In other kinds of cartilage the cells are embedded in an intercellular substance, presenting certain varieties of appearance.

In articular cartilage the cells are oval or roundish, dispersed in groups through a nearly homogeneous intercellular substance. The cells measure from the 1300th to the 900th of an inch. In the interior part of the incrusting cartilages the cells usually assume a more or less linear arrangement. In the different cartilages the cells vary in size and form.

The distinctive property of cartilage is elasticity, on which depends the specific use of this substance in the economy. It is mainly an adjunct to bones. Covering their extremities or interposed between layers of bony fibres, without in the least diminishing the firmness and strength of the osseous fibres, it enables the bones to yield in the shocks to which the body is exposed in the movements of the frame, defends them from fracture and displacement, and at the same time protects the great centres of the nervous system, the spinal chord and brain, from the concussions and jars to which these tender and delicate organs would, but for its interposition, have been constantly exposed.

CARTMEL. [LANCASHIRE.]

CARTOON, from 'carta,' *paper*, 'cartone,' *large paper*, Ital.: a word used by artists to signify the full-sized drawings or studies made in chalks, or body-colour (*tempera*, as it is called in Italy), preparatory to executing any great work either in oil-colour or fresco. Cartoons are also made when the design is to be copied in tapestry.

The great masters seldom commenced any extensive picture without first making studies or cartoons in *chiaro 'scuro*. Many of those by Raffaelle, Andrea Mantegna, Domenichino, the Caracci, and others, remain to attest the laborious diligence and care with which their great works were accomplished. By this means the composition, drawing, expression, and light and shade, were all perfected before the colouring of the picture was attempted.

The finest specimens of cartoons that are known are those executed by Raffaelle d'Urbino, which were sent to Flanders, in the reign of Pope Leo X., to be copied in tapestry, in two sets. The tapestries (only shadows of Raffaelle's exquisite designs) were finished, and one set is now in Rome.

The cartoons, originally twenty-five in number,

were left neglected at Brussels, and most of them seem to have been lost or destroyed. A few however escaped this fate, and seven are now in England in the royal collection at Hampton Court. Their history, ever since their arrival in England, is eventful. They were bought in Flanders by Rubens for King Charles I. At the dispersion and sale of the royal collection, the cartoons were secured to the country by purchase, by Cromwell's particular command; at which time, we are told, the Triumph of Julius Cæsar, by Andrea Mantegna (still preserved at Hampton Court) were valued at 2000*l.*, while the cartoons of Raffaelle were estimated at only 300*l.* In the reign of Charles II. they were again consigned to neglect. They had been sent to Mortlake to be copied in tapestry, where they were seriously injured. William III. had them repaired, and built a gallery at Hampton Court for their reception. George III. removed them to Buckingham Palace, and subsequently to Windsor Castle. They were again removed to Hampton Court, where they now are.

CARTRIDGE, a cylindrical case containing a charge of gunpowder or shot, or of powder and ball, for fire-arms. Those used for loading muskets, carbines, and pistols, are formed of paper, and are styled ball or blank cartridges according as they contain both powder and ball, or powder only; while the larger cartridges for cannon and mortars, which always consist of powder only, are usually cased with flannel, though sometimes pasteboard, tin, or even wood, is employed. The North Americans, during their last war with England, are said to have employed very thin sheets of lead, resembling those used for lining tea-chests, for this purpose, thereby avoiding the danger of burning fragments of the cartridge-case remaining in the piece after firing.

Wire cartridges, for containing a charge of small shot, without powder, have been introduced for sporting purposes within the last few years. They consist of an inner case of wire network inclosed in a thin paper case, to the outer end of which a wadding is attached. The shot, with which it is usual to mix bone-dust or some other substance to fill up the interstices, is put within this case, which is rammed down upon the charge of powder. When the gun is fired, the paper case is torn to pieces as soon as the cartridge leaves the gun, and the shot immediately begins to quit the cartridge by passing through the meshes of the wire net-work, which is carried forward with the charge until it is quite empty, when it falls to the ground. By this contrivance the heating of the gun is avoided, and the recoil produced by the discharge is lessened, the charge leaving the barrel like a bullet. The shot are also carried so much more closely than when loose, that lighter charges, and consequently a lighter gun, may be used; much time is saved in loading, especially as no separate wadding is required; and, as the cartridge has no inclination to move before it is impelled by the explosion of the powder, the danger arising from the accidental shifting or rising of loose charges is avoided.

In the 'Transactions' of the Society of Arts, vol. xlv. pp. 106, 107, is a description, illustrated by figures, of a very simple and efficient machine invented by Mr. Caffin for filling cartridges.

CARTWRIGHT, WILLIAM, born in 1611, was educated at Westminster and Oxford. He took orders, and in 1643 he became junior proctor and reader in metaphysics at the University, but died in the same year of a malignant fever. A collected edition of his 'Comedies, Tragi-Comedies, and other Poems,' appeared in 1647, and again in 1651. The miscellaneous poems which the volume contains are much inferior in merit to the four plays, one of which, 'The Ordinary,' has very justly received a place in the collection first published by Dodsley.

CARTWRIGHT, JOHN, elder brother of Edmund Cartwright, was born Sept. 28, 1740, at Marnham, Nottinghamshire, and entered the navy at an early age. Soon after his 30th year, though attached to his profession, he left it, being unwilling to serve in the war against the North American Colonies. In 1775 he received a major's commission in the Nottinghamshire militia. The attainment of annual parliaments and universal suffrage became the object of his exertions for the remainder of his life, and his activity in promoting this cause was incessant, speaking, writing, and printing in its favour. He died Sept. 23, 1824. A bronze statue has been erected to his memory in Burton Crescent, London.

CARTWRIGHT, EDMUND, was born April 24, 1743, at Marnham, Nottinghamshire. He was educated at Wakefield and at Oxford, and became a fellow of Magdalen College. He afterwards held the living of Brampton, near Chesterfield, and subsequently that of Goadby-Marwood, in Leicestershire. He wrote some poetical pieces, which were favourably received by the public, and was also a contributor to the 'Monthly Review.'

In the summer of 1784 his attention was accidentally called to the subject of mechanical weaving. Dr. Cartwright's attention had never been directed to mechanical inventions, but by the following April he was enabled to produce his first power-loom, which, though an extremely rude machine, soon received many valuable improvements. Its first introduction was opposed both by manufacturers and their workmen, owing to various prejudices; and a mill containing 500 of his looms, the first which had been erected, was wilfully burnt down. With various improvements however it continued to force its way into use. In April 1790, Dr. Cartwright took out a patent for combing wool; altogether he obtained ten different patents for inventions and improvements of various kinds. In 1809 Parliament granted to Dr. Cartwright, who had hitherto derived little advantage from his inventions, the sum of 10,000*l.* for 'the good service he had rendered the public by his invention of weaving.' This was less than he had expended on his projects, but it enabled him to pass the remainder of his days in ease and comfort. He died Oct. 30, 1823.

CARUM, a genus of plants belonging to the natural order *Umbelliferæ*. The species are glabrous herbs with perennial tuberous edible roots, pinnate leaves, and white flowers.

C. Carui, common caraway, the fruit of which is known in shops by the name of caraway seeds, is both sown in the garden and in the field. When raised in the garden, a quarter of an ounce of seed will serve for a bed four feet by six. It should be sown in the autumn, and when the seedlings have put forth their stems they should be thinned to about a foot distance each way. To secure the fruit in perfection it must be ripe, brown, not green, and when rubbed or bruised it should emit a strong characteristic odour. This depends on the presence of a volatile oil, which exists in the proportion of 4 to 5 per cent. The oil is obtained by distillation.

(Babington, *Manual of British Botany;* G. Don, *Gardener's Dictionary.*)

CARUN'CULA, a name applied by botanists to protuberances found occasionally surrounding the hilum of a seed. It is sometimes also called a strophiloa. Parts of this kind occur on the seeds of *Euphorbia Lathyris.*

CA'RUS, MARCUS AURE'LIUS, Prefect of the Prætorium under the Emperor Probus, was elected emperor by the soldiers, after they had murdered Probus, A.D. 282, in his camp near Sirmium in the Illyricum. Carus was a native of Narbo, an old Roman colony, and a Roman citizen by birth. He made war against the Sarmatians, and defeated them. He marched next against the Persians, A.D. 283, and took with him his younger son Numerianus, leaving his elder son Carinus to administer Italy, and the other provinces of the west, in his absence. Carus overran Mesopotamia, and took Seleucia and Ctésiphon, after which, as he was encamped beyond the Tigris, a great thunder-storm arose, and it was reported that the emperor was killed in his tent by the lightning: the servants upon this set fire to his tent, and his body was consumed. But the strongest suspicions rested upon Arrius Aper, Prefect of the Prætorium, the same who soon after killed Numerianus. Carus reigned about seventeen months. He was succeeded by his two sons Carinus and Numerianus.

CARVING, the art of forming any hard materials into a proposed shape or figure by means of sharp instruments. It is usually understood to refer exclusively to works in ivory or wood, to distinguish it from carving in marble or stone, which comes under the term *sculpture;* or in metals, when it is called *chasing.* The ancients used ivory to a great extent in works of art, and its union with gold, called by the Greeks *chrys-elephantine* sculpture, was adopted by the greatest artists. In later times carving in ivory has been confined to smaller objects. Wood of almost every description was a favourite material for carving among the ancients, and, after clay, was doubtless, from the facility of cutting it, the first substance used for imitative art.

For a long period in modern times, there was a great demand for fine wood-carvings. The elaborately worked Gothic screens, choir seats, and desks, in most of our cathedrals and colleges, canopies, frames for doors and pictures, cabinets, and indeed every description of furniture, are evidences of the extent to which it was employed, and of the skill of the artists. One of the most eminent modern carvers in wood was Grinling Gibbons, a native of England. In London, the choir of St. Paul's may be instanced as a work of this artist. The German and Flemish carvers in ivory and wood were also much distinguished.

CARY. [FALKLAND, LORD.]

CARY, REV. HENRY FRANCIS, was born at Birmingham in 1772, and was entered a commoner of Christ Church, Oxford, in 1790. While at the university he devoted much of his time to the study of Italian, French, and English literature. Having taken his degree of M.A. in 1796, he was in 1797 presented by the Marquis of Anglesey to the vicarage of Bromley Abbat's, in Staffordshire. In 1805 appeared his translation of the 'Inferno' of Dante in English blank verse, accompanied with the original Italian; and in 1814 his entire version of the 'Divina Commedia.' It was some years however before this work, to which Cary principally owes his literary reputation, attracted much attention. It was first brought into general notice by Coleridge, who is said to have become acquainted with it and with Cary himself about the same time. Ultimately its merits were generally acknowledged, and the author had the satisfaction of bringing out a fourth edition of it before his death. It must, however, be considered as a defect detracting materially from its claim to be regarded as a faithful representation of the 'Divina Commedia' that it is in blank verse: rhyme is an essential element of the spirit and character of Dante's poetry. Cary afterwards produced verse translations of the 'Birds' of Aristophanes, and of the 'Odes' of Pindar; a series of Lives of English Poets, in continuation of Johnson's, and another of Lives of Early French Poets, in the 'London Magazine;' besides editions of the works of Pope, Cowper, Milton, Thomson, and Young. In 1826 he was appointed assistant librarian in the British Museum, but he resigned that situation in 1832. He afterwards received a pension of 200*l.* a year from the crown, which he enjoyed till his death, 14th August, 1844. He was interred in Poets' Corner, Westminster Abbey. (*Gentleman's Magazine* for October 1844.)

CA'RYA, the botanical name of the genus of the North American trees which comprehends the various kinds of Hickory.

Carya olivæformis is a swamp species, with a slender stem, sometimes as much as 70 feet high. The nuts are oblong, and the kernel is good to eat, and by far the best of the hickory-nuts; on this account the nuts are a small article of North American trade. *Carya sulcata,* Thick-Shell-Bark, Springfield or Gloucester Nut; *Carya alba,* White-Shell-Bark; *C. tomentosa, C. amara, C. aquatica,* and *C. procina* are all species of this genus. The timber of all is very similar in quality, and is remarkable for the lozenge-shaped arrangement of its woody tissue. It is heavy and coarse-grained, but tough and durable unless exposed to weather. As a fuel it surpasses all other wood, in the length of time taken to consume it, and the heat it gives forth.

CARYA'TIDES, female figures employed in architecture in place of columns. Vitruvius attri-

butes the origin of Caryatid figures to the circumstance of the inhabitants of Caryæ, a city of Peloponnesus, taking part with the Persians during the invasion of Xerxes, and their consequent punishment; the men were slain, and the women carried into captivity, and their ignominy was perpetuated by the employment of figures, similar to the women of Caryæ, in place of columns. The use of Caryatid figures appears to be more ancient than the date of the story told by Vitruvius. Like many other forms in art, they were most probably drawn from Egypt. Six beautiful Caryatid figures were employed in the Pandrosion, one of the buildings on the Acropolis of Athens. The northern portico of the Pandrosion had six Ionic columns, four in front, and one on each flank: the southern portico was supported by six Caryatid figures, four in front, and one on each flank. They were placed upon a basement, and supported an enriched entablature. (Stuart's 'Athens,' vol. ii., plates.) One of the figures is now in the British Museum, among the Elgin collection. The execution of this figure is very fine; its height is 7 feet 9 inches.

Caryatid Figure, from the Pandrosion.

CARYOCAR, the only genus of the natural order *Rhizobolaceæ*, one of whose species yields the Butter-Nuts of the London fruiterers' shops. One species is described by Aublet under the name of *Peakea butyrosa*, as a large tree with a trunk 80 feet high, and 3 feet in diameter. The bark is grayish; the wood reddish, hard, and compact. The berries are covered by a rind two or three lines thick, and consisting internally of a buttery yellowish substance, which melts between the fingers, and which is sometimes used in cooking instead of animal butter. Under the rind lies a stone covered all over with slender stings, which easily separate, and become very troublesome to those who open the stones; within is a kidney-shaped kernel, covered with a brownish membrane, and very good to eat; it is commonly served at table. It is cultivated in Guiana. The species that furnishes the butter-nuts of the London markets is much like this, but differs in having no stings upon the surface of the stone of its fruit. Another species, the *Caryocar nuciferum*, bears what are called the Suwarrow or more properly Saouari nuts of commerce.

CARYOPHY'LLEÆ, a natural order of plants the type of which may be considered the *Dianthus caryophyllus*, or common garden Pink. The species are in many cases mere weeds; in no instance have they properties of any importance, being mostly inert, but are occasionally objects of cultivation on account of their pretty flowers.

CARYOPHYLLUS AROMA'TICUS, the Clove-tree, is an evergreen small tree, belonging to the natural order *Myrtaceæ*. It is a native of the Moluccas, whence it has been carried to all the other tropical parts of the world. The cloves of the spice-shops are the flower-buds of this plant, gathered before they open, and dried in the sun. The name *clove* is a corruption of the French word *clou*, a nail, a name that has been suggested by the resemblance of the dried clove to a nail. The aromatic stimulating effects of cloves are well known.

By distillation a thickish oil is obtained, which is at first colourless, but by time becomes yellow and brown. Its taste is very fiery and aromatic; it reacts as an acid. In time there separates from it a stearopten, or clove-camphor, called *caryophyllin*.

Cloves are employed in medicine, and also more extensively for culinary purposes. When received into the stomach they are powerfully stimulant, and promote digestion when taken along with food which is insipid or difficult of digestion. Though the action is generally limited to the stomach, yet if taken in excess, or the use very long continued, it extends to the brain, and causes giddiness and other inconveniences. Either alone or when made the vehicle for carbonate of ammonia, nothing so effectually and safely removes that feeling of coldness and weight about the stomach experienced by hysterical or gouty persons, and renders it unnecessary to have recourse to alcoholic stimulants, such as brandy, which is too frequently employed under such circumstances. Oil of cloves is used much in medicine.

CARYOTA, a genus of palms. The best known species, *Caryota urens*, is a native of most of the tropical parts of Asia, especially in mountainous situations, where, according to Roxburgh, it grows to be one of the largest of the palm tribe. Its trunk is described as being 60 feet high, thick in proportion, and slightly marked with annular scars, produced by the fall of its leaves; its wood is so hard as to be cut with some difficulty, and is consequently of considerable value, provided the soft sap-wood in the centre is scraped away. The fruit is called a berry, one-celled, roundish, about the size of a plum, with a thin yellow rind, so acrid, that it produces a severe sensation of burning if applied to the skin, and hence its name *urens*. Roxburgh describes the tree as being highly valuable to the natives of the countries where it grows in

plenty: it yields them, during the hot season, an immense quantity of toddy, or palm-wine. The pith, or farinaceous part, of the trunk of old trees is said to be equal to the best sago; the natives make it into bread, and boil it into thick gruel.

CASA'LE, a sub-division of the province of Alessandria, in the continental dominions of the King of Sardinia. It is bounded N. and E. by the Po, S. by the district of Alessandria, and W. by the provinces of Asti and Turin. It is intersected from N.W. to S.E. by the hills of Monferrato. Wine, silk, and truffles are the chief produce. Sheep are numerous. The population amounts to about 105,000. The chief town, Casale, the former capital of Montferrat, is situated on the right bank of the Po. It is fortified, and has a population of 26,000. The old castles of the marquises of Monferrato, the cathedral, the church of Santa Caterina, and that of the Dominicans, are the most important buildings. Casale has several palaces belonging to the nobility, a theatre, and a college. It is the seat of a bishop, and the residence of the governor of the province. Silk-throwing and trading in corn, wine, and other agricultural produce afford occupation to a large number of the inhabitants. The town of Moncalvo, with 4000 inhabitants, is a few miles S.W. of Casale.

The word *Casale* means a collection of houses, and is found in several other Italian names, as Casalmaggiore in Lombardy, Casalnuovo in Calabria. In Malta and Gozzo the villages, some of which are very large, are called *casali*.

(Serristori's *Saggio Statistico*; Balbi.)

CASAN, properly KASAN, a province of European Russia, lies between 54° and 57° N. lat. and 46° and 52° E. long. The surface is an undulating level, with forests, rivers, savannahs, swamps, and marshes; the south-eastern part of it is traversed by the western branches of the Ural Mountains. Its area is 22,000 square miles, and its population in 1846 was estimated at 1,342,900. It is divided into 12 circles. The Volga flows eastward through the province nearly as far as the town of Kasan; it then turns south, and receiving the Kaama, its largest tributary, and several other feeders, pursues its course to the Caspian. The province contains many small lakes, which, as well as the rivers, are well stocked with fish. The climate is on the whole salubrious; but the winter is so severe that the rivers are covered with ice from November to the end of March. The soil is fertile. Hemp, fruit, and vegetables are grown for ordinary consumption. The forests contain good timber, and abound in bears, wolves, and game. Large herds and flocks are reared on the rich pasture-grounds which border the river. The Tartar inhabitants, who live in villages or in a separate quarter of the towns called *slobode*, collect a great deal of wax and honey. Stone for building, chalk, lime, alabaster, salt-petre, and small quantities of iron and copper are found. There are in the province numerous distilleries, saw-mills, potash-works, tanneries, &c.

CASAN, the capital of the province, stands on a hill about 5 miles above the influx of the Casanka into the Volga, in 55° 48′ N. lat., 49° 21′ E. long., at a distance of 1034 miles from St. Petersburg, and has a population of 60,000. It is composed of the Kremlin, or citadel, the Middle Town, and the Lower Town; the whole encircled by gardens, fields, and meadows, which, when the Casanka is swollen by the waters of the Volga in the spring, are subject, as well as the Lower Town, to very heavy inundations. The Kremlin contains the governor's palace, archiepiscopal residence, prisons, houses of correction, and the highly venerated 'Kazanskaya Boyeniater,' or cathedral of the Holy Virgin of Casan, the prototype of other Greek churches in various parts of Russia. The Middle Town has a fine bazaar, a beautiful market-place, and several well-built churches. The Lower Town, next to the Bulak, a feeder of the Casanka, contains the residence of the merchants, the university buildings, connected with which are valuable collections of coins, natural history, &c., a botanical garden, and a well-furnished observatory. Casan has 41 Greek churches, 8 Tartar places of worship, a theological seminary, a great number of schools, and a Russian and a Tartar printing-house. Casan is the seat of an admiralty, and has a great cloth manufactory, in which 1000 work-people are employed. Cottons, morocco and other leather, soap, steel, iron, and earthenware, tiles, gunpowder, spirits, and beer are the other chief manufactures. It carries on an extensive trade by means of the Volga in these products, and in tea and other Asiatic imports. Tschebok-sary with 5000 inhabitants, and Swiähsk with 4000, both on the right bank of the Volga and west of Casan, are the most important of the other towns. (Cochrane and Holman; Macgregor's *Statistics*.)

CA'SAS, BARTOLOME'O DE LAS, was born at Seville of a noble family in 1474. When he was about twenty he accompanied Columbus in his second voyage to the West Indies. On his return to Spain he entered into holy orders, and after some years went back to Hispaniola, where he found the Indian population cruelly oppressed by the Spaniards. Las Casas devoted himself to the mitigation of the sufferings of this devoted race; and his exertions were to some extent successful as far as regarded the law, but the demand for labour occasioned continual infractions of the rules laid down. To remedy this, it is said, Las Casas suggested that the African blacks were a much stronger race than the Indians, and might make a good substitute. This has been made a ground of reproach against the memory of Las Casas, but the fact is doubtful. Unable to effect the good he wished by his oral remonstrances, Las Casas had recourse to his pen, and published three treatises in favour of the Indians, of whose sufferings he gave an appalling picture. He next formed a plan for transplanting the natives of Hispaniola to Cumana on the adjacent continent; he accompanied a number of them, but the project failed, and Las Casas returned to Hispaniola, where he took refuge in the convent of the Dominicans, whose order he entered in 1522. Some years afterwards, he returned to Spain, and made a fresh appeal to Charles V. in favour of the oppressed Indians. Las Casas was subsequently appointed

bishop of Chiapa, in the newly conquered empire of Mexico. After remaining for many years in his diocese, ever intent on mitigating the sufferings which the natives endured from the conquerors, Las Casas returned to Spain in 1551, having resigned his bishopric, and died in a convent of his order at Madrid in 1566.

He left in MS. 'Historia General de las Indias,' in 3 parts or volumes, in which he treats of the discovery, conquest, and subsequent occurrences in the New World, as far as the year 1520. This work has never been published. The first two volumes, in his own handwriting, are preserved in the library of the Royal Academy of History, and the third in the Royal Library at Madrid.

CASAUBON, ISAAC, was born at Geneva, on the 8th of February, 1559. His father and mother were natives of the Dauphiné, and retired to Geneva to avoid religious persecution. They returned however, after the persecution ceased, to Crest, a small town of Dauphiné, of which his father was appointed minister, and here Casaubon studied under him till his nineteenth year, when he went to Switzerland to hear the lectures of Francis Portus, a Cretan, then Professor of Greek at Lausanne, whom he succeeded on his death in 1582. In 1586 he married Florence, daughter of Henry Stephens. He removed to Montpellier in the latter end of 1596, having been appointed Professor of Greek there. In 1599 Henry IV. sent for him to Paris, and in the following year appointed him one of the Protestant judges in the controversy between Du Perron, Bishop of Evreux, and Du Plessis-Mornay. In 1603 he succeeded Gosselin as head librarian to the king. On the death of Henry IV., in 1610, he went over to England with Sir H. Wotton, the English ambassador. James I. received him with great distinction, and employed him in writing a confutation of Baronius. Casaubon was appointed Prebendary of Canterbury and Westminster, and had also a pension of 300*l*. He died on the 1st of July, 1614, and was interred in Westminster Abbey, where a monument was erected to his memory. His chief works are the following:—1, 'Strabo,' Geneva, 1587; reprinted with Additions, Paris, 1620, fol.; 2, 'Aristotelis Opera,' with Marginal Notes, Geneva, 1605, fol.; 3, 'Theophrasti Characteres,' Lugd. 1592, 12mo.; the best edition is the third, printed at Lyon in 1612; 4, 'Suetonii Opera,' with an excellent Commentary, Geneva, 1596, 4to.; best edition, Lutet., 1610, fol.; 5, 'Athenæus,' Lugd., 1600, fol.; Lugd., 1612, fol.; 6, 'Persii Satyræ,' Lutet., 1605, 8vo.; 7, 'De Satyricâ Græcorum Poesi,' Lutet., 1605, 8vo.; 8, 'Polybii Opera,' Lutet., 1609, fol. He left a large family.

CASAUBON, MERIC, son of Isaac Casaubon, was born on the 14th August, 1599. He came to England with his father, and in 1614 or 1616 he was sent to Christ Church College, Oxford, and elected student of that foundation. He took his degree of M.A. in 1621, and in the same year published a defence of his father and the Protestant faith against the Roman Catholic. Bishop Andrews presented him to the living of Bledon, in Somersetshire, in 1624. In 1628 Archbishop Laud made him Prebendary of Canterbury and Rector of Ickham. The civil war deprived him of all his preferments, and he lived in retirement till the Restoration, when he was restored to all his ecclesiastical preferments. He died 14th July, 1671, and was buried in Canterbury Cathedral. His works, though numerous, are not of great value.

CASBIN, or KAZVIN. [PERSIA.]

CASCARILLA, a name given by the Spanish Americans to all kinds of tonic barks, and especially in Peru to the different kinds of Cinchona; but in England this word is confined to one kind of bark, imported from the equinoctial parts of America, and used medicinally as a valuable aromatic and tonic. It arrives in Europe in short, thin, brittle rolls, whence its name, *Cascara*, bark; *Cascarilla*, little bark. It is said to be received from Paraguay as well as the West India Islands. Botanists have ascertained that it is furnished by certain species of the genus Croton, particularly by *C. cascarilla* and *C. eleutheria*.

CASE, in Grammar. [DECLENSION.]

CASE, ACTION UPON THE, is one of the forms of action into which, by the common law of England, remedies for civil injuries are distributed. It derives its name from the circumstance that, in the old form of the writ of process, which formed the commencement of the suit, the particulars of the wrong complained of, or the *case*, were set out in detail with nearly the same precision as in a declaration.

CASE-SHOT are bullets contained in a cylindrical tin canister, or in a spherical shell of iron, which are discharged from a piece of ordnance. The first of these kinds of cases burst immediately on leaving the gun, and the bullets, which at first take diverging rectilinear directions, soon lose all regularity of motion; their effective range does not exceed 500 yards.

The spherical case-shot, which were formerly called Shrapnell's Shells from the name of the inventor, are fired like common shells, and, the length of the fuse being properly regulated, they only burst at the required spot; consequently the scattered balls and the fragments of the shell may be made to take full effect in a column of an enemy's troops at 800 or 1200 yards' distance.

CASEIN is the basis of the various kinds of cheese, and closely resembles albumen in many properties; is a curdy white substance, insoluble in water or alcohol, but soluble by water containing an alkali or its carbonate. It is coagulable, and is separated from the milk in making cheese. It consists of carbon 54.96, hydrogen 7.15, nitrogen, 15.8, oxygen 21.73, sulphur 0.36.

CASEMATE, a vault of stone or brick-work, frequently built in the thickness of the rampart of a fortress for the reception of artillery which is to fire through embrasures pierced for the purpose in the front of the vault.

The smallness of the flanks in the ancient bastions, and consequently the insufficiency of the fire from their parapets, gave rise to the invention of casemates, which, being formed under those para-

pets, augmented the means of defending the ditches without rendering any change necessary in the size of the works. Casemates so situated appear to have been executed as early as the sixteenth century; and in the works of Vauban they have also been constructed under the parapets in the flanks of the ravelins and of their reduits, for the purpose of defending the ditch and opposing the construction of the besiegers' counter-batteries. It is generally supposed that the smoke arising from the discharge of artillery in casemates so situated soon renders the latter untenable; but from an experiment made by French engineers in the casemates of Neu Brisach, when 60 rounds were fired from two pieces in half an hour, it appears that the apprehensions entertained on this subject are without foundation. Casemates are now frequently made open towards the rear, and with air-holes in front.

The term casemate is also applied to the shell-proof vaults of stone or brick constructed in fortresses to protect the troops, provisions, and ammunition. These are usually formed on the fronts which are least exposed to the enemy, and within the masses of the ramparts either of the bastions or curtains, in order that they may be sufficiently protected from the effect of shells falling on them. Attention should also be paid in constructing them that their interiors be dry and well ventilated. When casemates are built for troops, they should be 16 feet wide, in order to allow room for a double row of beds with a passage along the middle; and on the hances of the vault (the weakest part) the brick-work should be about three feet thick. Those at Gibraltar are from 16 to 18 feet wide in the interior, and 16 feet high from the floor to the crown of the arch, which is semicircular, and they are from 40 to 100 feet long. The vaults of the casemates on the western heights at Dover are parabolical; the whole interior height is 17 feet, and the breadth 18 feet.

CASH-CREDIT. [BANK, BANKER, BANKING.]

CASHEL. [TIPPERARY.]

CASHEW-NUT. [ANACARDIACEÆ.]

CASHMERE, the most extensive of the valleys of the Himâlaya range, lies embedded in high mountains, between 33° and 35° N. lat., and 74° and 76° E. long. It extends from S.E. to N.W., according to Rennell, between 74 and 75 miles, and its breadth varies from 15 to 36 miles, when the declivities of the mountains are included. In the middle of the valley, near the capital, Sirinagur, there is a level plain some miles in width. This plain is surrounded by high hills, with rather a gentle slope, and covered with fine large trees and excellent pastures. Behind them rise the mountains far beyond the snow-line.

Almost innumerable rivulets descend from the sides of the mountains, and are abundantly filled with water at all seasons. They join, in the centre of the valley, a river, which rises at the S.E. extremity of the valley. This river, called the Jhylum, or Behut (the Hydaspes of Alexander), has, at Sirinagur, about 60 miles from its source, as much water as the Seine at Paris. Its course through the plain is gentle, and it continues so to the lake of Wulur; issuing from which, in a westerly direction, the river enters a hilly country, where it is soon narrowed by steep rocks. It forms several rapids and cataracts, until it reaches Muzzufferabad, whence it flows through the plain of the Panjab till it joins the Chinaub (Acesines). The lake Wulur has a circuit of about 40 miles. Near Sirinagur is another lake called Dull, which, though shallow, is of considerable extent.

Numerous canals intersect the plain in every direction, which are navigated by river barges. Cashmere is noted for the mildness of its climate in summer, when the heat is much less oppressive than in the Panjab or the plains of Hindustan. The winters are of course cold in a valley which is 6000 or 7000 feet above the sea. The sky during the winter months (from December to March) is very cloudy. June, July, and August are hot, but the mornings, evenings, and nights are generally cool. Cashmere produces wheat, barley, buck-wheat, millet, maize, pulse, and rice. Rice is raised in the greatest quantity, and may be considered as the staple. The streams which descend from the sides of the mountains afford facilities for watering the fields. The lower classes live partly on the singhara, or water-nut, which, during eight or nine months of the year, is fished from the bottom of the lake Wulur. The mucilaginous pith of the water-lily (*Nymphæa lotus*) also supports a considerable number of people during eight months. Turnips, spinach, loose-leaved cabbages, and lettuces are raised in the usual manner. Cucumbers, gourds, and melons are cultivated in great quantities, by the ingenious and simple contrivance of platforms floating on the lakes. These swimming beds are commonly two feet thick, seven broad, and of considerable length. Among the cultivated plants the crocus is the only one which furnishes an article of export, the saffron of Cashmere being valued in all parts of western Asia.

Fruit-trees of almost all kinds are abundant on the declivities of the hills, and the fruit is gathered by the natives as a means of subsistence. No trees are cultivated with any care except the walnut. The kernel is eaten, and used for making oil, and the husks of the fruit are employed in dyeing black. Cashmere is famous for its flowers, especially roses, which are cultivated with care, and from them *attar* or otto of roses is obtained.

A breed of black cattle is reared, which gives abundance of milk. Sheep are very plentiful, and goats abound in different places.

Neither poisonous nor carnivorous wild animals are said to exist in Cashmere; but the forests abound with some kinds of deer, and the rivers with fish and water-fowl.

The population of Cashmere is estimated to amount to 600,000. It consists, with few exceptions, of the natives, who appear to be of Hindoo origin. The Cashmerians are very industrious, which is shown in the excellence of their cultivation, and the perfection which their manufactures have attained. The principal branch of industry is shawl-making, in which a great number of individuals are employed, though much fewer than

formerly. [CASHMERE.] Paper is also manufactured, and is considered as the best made in western Asia.

Sirinagur (Sranagara), the capital, contains from 150,000 to 200,000 inhabitants. It is nearly in the centre of the plain, on the north-east bank of the Jhylum, and is traversed by two small rivers. The streets are narrow and dirty. The houses are built of wood, and commonly four stories high. The ground-floor serves as stables and for agricultural or other utensils. The family live in the first-floor, and the third and fourth are used as magazines of goods and provisions. There is no good public building.

Islamabad, higher up the river Jhylum, is also a considerable town, situated on the right bank, where the river becomes navigable for barges.

Sampre, likewise a populous town, is also on the right bank of the Jhylum, about twelve miles below Sirinagur.

Cashmere seems to have formed an independent kingdom up to the thirteenth or fourteenth century, when it was subjected to the Gaznevides, and afterwards united to the dominions of the emperors of Delhi. When that empire was destroyed, about the middle of the last century, Cashmere was taken by the Afghans, who remained in possession of it till it became a part of the extensive dominions of the Maharaja Runjeet Sing, the late sovereign of Lahore. After the defeat of the Sciks in 1846, the British government by a treaty transferred Cashmere to Gholab Sing, in whose possession it now (1848) remains.

(Bernier; Forster; Moorcroft in *Geographical Journal.*)

CASHMERE, or CACHEMERE, a peculiar textile fabric formed of the fine downy wool found about the roots of the hair of the Tibet goat, and so called from the original seat of the manufacture, in the valley of Cashmere, in the north-west of India. Shawls of exceedingly delicate quality are the principal articles manufactured of this material; but a cloth woven in imitation of them is also made, and called by the same name, or by corruption, Cassimere. *Kerseymere*, which resembles cassimere in sound, is a different fabric. [WOOLLEN AND WORSTED MANUFACTURES.]

An interesting description of the manufacture of Cashmere shawls is given in Vigne's 'Travels in Kashmir,' from which an extract is given in the 'Penny Magazine' for August 13, 1842.

The process is exceedingly slow, the weaving of a pair of shawls, or, as some writers have it, of a single shawl, often employing three men with a clumsy old-fashioned loom for a period of six months; and, owing to the numerous heavy duties charged upon the shawls between leaving the loom and reaching a purchaser in this country, the price of real Cashmere shawls of the best quality is very high. They have frequently been sold in London at from 100 to 400 guineas each, and at one time, when the import duty, which has since been greatly reduced, amounted to 80 per cent. on the value, as much as 500 guineas has been demanded for a single shawl.

Various attempts have been made to naturalise the Cashmere shawl goat in this and other European countries; but, as the peculiarities of its wool appear to be dependent upon climate, the perfect success of any such attempt is problematical. The wool itself has also been imported as a raw material. From the article 'Glasgow,' in the seventh edition of the 'Encyclopædia Britannica,' it appears that in 1830, at which time the weaving of shawls from Cashmere yarn imported from France had become an important branch of manufacture, a premium of 300*l.* was offered by the Board of Trustees for the Encouragement of Arts and Manufactures in Scotland, to the *person* who should first establish the spinning of Cashmere wool upon the French principle. In consequence of this offer, Captain C. S. Cochrane devoted himself to the subject, and having succeeded, after some difficulty, in obtaining a knowledge of the secret, he patented the plan, and subsequently sold his patent to the Messrs. Holdsworth, of Glasgow, who established the manufacture successfully, and obtained the offered reward in 1832.

CASIMIR, Kings of Poland. [POLAND.]

CASPIAN SEA is properly an inland lake in Asia. It extends from 47° 20′ to 36° 40′ N. lat., in a straight line about 740 miles. The general direction of its length is from S. by E. to N. by W. Its width averages about 210 miles.

The Caspian Sea has very few bays. Among them are the Mertwoï Kultusk, the Kooli Déria, Balkan Bay, the Bay of Salian, and the Bay of Kooma. The shores are mostly very low; so as to be subject to inundation during a high wind from the lake. The peninsula of Abcheron projects 40 or 50 miles into the sea on the west side. The depth in some places reaches to 600 feet; but, as the sea is mostly shallow near the coasts, it is unfavourable for navigation by large ships. The water is salt, but less so than that of the ocean.

The navigation of this sea is confined to the countries lying on the west shores between the mouth of the Volga and the town of Asterabad. The Russians of Astrakhan use brigs of from 150 to 200 tons; but the Persians only small vessels, from 50 to 70 tons. The fisheries give employment to the inhabitants of the adjacent countries, who capture vast numbers of sturgeon, belugas, sterlets, salmon, and seals. On the shores, much naphtha is met with.

The Caspian appears to be subject to some extraordinary changes in the level of its surface, which have not yet been completely investigated. The depth seems to have been greater at some periods than at others. There are no tides on the Caspian. The northern portion of it is annually covered with ice. Since the middle of the last century it has been known that the surface of the Caspian Sea is lower than that of the ocean. Pallas and Engelhardt found, by barometrical measurements in 1812, that the Caspian is 301 feet lower than the Black Sea; another experiment gave a difference of 348 feet. But recent accurate experiments, made by Fass, Savitch, and Sableshar, show that the depression is only 83½ feet. It is supposed by some geologists that the Caspian Sea at a remote period covered the extensive plain which lies between the most southern ranges of the Ural Mountains and the Black Sea. This is inferred

from the peculiar nature of the soil of this plain, which consists of sand, partly unmixed with other kinds of earth, and partly containing a portion of clay loosely mixed with it. There is no grass upon it; and shells frequently occur which are met with in the Caspian Sea. It is also impregnated with salt, and contains a great number of salt lakes. It is supposed that the Sea of Aral once formed a part of the Caspian Sea. [ARAL, SEA OF; OXUS.]

The Caspian was known to the Greeks and Romans. Herodotus (i. 203), the first who mentions it, calls it the Caspian Sea, a name probably derived from the Caspii, who inhabited its southern coast.

(Monteith, in *Lond. Geog. Journal.*)

CASSANDER was the son of Antipater, who dying, B.C. 318, appointed Polysperchon to succeed him. [ANTIPATER.] Cassander, finding his party too weak for successful opposition, fled to Asia, and sought the assistance of Antigonus and Ptolemæus. Antigonus gave him 4000 men, with whom he sailed to Athens, and was received by Nicánor, the Macedonian governor of Munychia. Polysperchon brought an army to besiege him, but was soon obliged, by scarcity of provisions, to draw off the greater part of his troops into Peloponnesus. Almost the whole of Peloponnesus favoured Polysperchon; Megalópolis however remained firm to the party of Cassander, and defended itself with such resolution, that Polysperchon was compelled to retreat. 'Polysperchon falling into disgrace through this failure (Diodorus, xviii. 74), most of the Greek cities went over to Cassander;' and, among the rest, Athens, B.C. 317.

In the following year, Cassander marched into Macedonia against Polysperchon, who had associated with himself Olympias, the mother of Alexander. Leaving Callas, his general, to oppose Polysperchon, Cassander blockaded Olympias in Pydna during the winter. Pydna yielded on capitulation early in B.C. 315, when Olympias, contrary to the terms of surrender, was put to death through his agency. Having now gained possession of Macedonia, he took to wife Thessalonice, the half-sister of Alexander. In the same year he founded the city of Cassandria, in Pallene, which was formerly called Potidæa. Soon after he joined the combination of Ptolemæus, Lysimachus, and Seleucus, against Antigonus. The war which ensued was concluded in B.C. 311, and Cassander was appointed military governor of Europe till the son of Roxána by Alexander should attain his majority. Cassander immediately putting to death the young prince and his mother, B.C. 309, Polysperchon set up another rival to him, in the person of Hercules, the only surviving son of Alexander, but he agreed to put Hercules to death on condition of Peloponnesus being given up to him. Hercules was accordingly murdered, but Polysperchon was not able to get possession of Peloponnesus.

During the Rhodian war [ANTIGONUS] Cassander regained much influence in Greece, which he had lost by the intrigues of Antigonus and the military successes of his son Demetrius. The death of Antigonus at the battle of Ipsus, B.C. 301, removed Cassander's most formidable enemy, and from that time he held secure possession of Macedonia. He died B.C. 296. He was succeeded in Macedonia by Philip, his eldest son.

CASSATION, 'the reversal of a judicial sentence,' is a French law word, derived from 'cassare,' which, in the barbarous Latin of the lower ages, was synonymous with 'irritum reddere,' 'to annul' (Ducange). The French Tribunal de Cassation received its full organisation under Napoleon, and has ever since continued under the name of Cour de Cassation. It is the highest court of France, and receives appeals from all other courts. It consists of 48 members, who, by the charter of Louis XVIII., are appointed by the king, but retain their places for life. The court has its president, although on certain occasions the keeper of the seals, or minister of justice, has the right of presiding in it. It is divided into three sections: 1, Section des Requêtes, which examines whether the petitions or appeals are to be received; 2, Section de Cassation Civile, which decides upon appeals in civil cases; 3, Section de Cassation Criminelle, which decides upon appeals in criminal matters. The sections do not decide upon the main question, but only on the competency of the other courts, and the legality of the forms and principle of law by which the case has been already tried. If the law is found to have been violated, the sentence of the inferior court is annulled, and the case is sent to be tried again by another court. If this second court decides the case in the same manner as the first, and a petition against the decision is again laid before the Court of Cassation, then the three sections unite in order to examine the case anew, and, if they find reason to pass a second reversal, the case is sent to be tried before another court. Should this third court decide in the same manner as the other courts, and a petition against the decision be again presented to the Court of Cassation, the court requests a final explanation of the law on the point at issue from the legislature.

The institution of the Court of Cassation has proved highly beneficial to France; it has acted as a watchful guardian of the laws; it has afforded protection to the citizens against the arbitrary acts, and the misjudgments or misconstructions, of the other courts of the kingdom. Placed by the nature of its office out of the immediate influence of political passions, it has maintained its high character for strict impartiality throughout all the changes of government and administration. Many of the most distinguished jurists of France are numbered among its members. We can only mention here the names of Henrion de Pansey, who was long president, and is known for his juridical works; and Merlin de Douai, who was procureur to the court, and is the author of the 'Répertoire de Jurisprudence,' 16 vols. 4to.

CASSA'VA, or Manioc, a nutritious fecula obtained from the roots of Jatropha or Janipha Manihot, and some allied species. This plant, belonging to the natural order Euphorbiaceæ, abounds in a highly poisonous juice, very small doses of which produce the most dangerous consequences; it is however of so volatile a nature as to be entirely driven off by heat, and conse-

quently there is no practical difficulty in procuring the nutritious substance in a pure state. In order to effect this the roots are peeled, well washed, and then ground between millstones till they are reduced to the state of paste. This is subjected to pressure for the purpose of depriving it, as far as possible, of the juice; the residue is placed in vessels over a brisk and regular fire, and continually stirred, until it becomes dry; it then acquires a granular appearance, is gradually cooled, and afterwards packed in barrels, when it may be preserved for a great length of time. Tapioca is a preparation of Cassava.

CASSEL. [HESSE-CASSEL.]

CASSEL, the capital of the electorate of Hesse Cassel, in the province of Lower Hesse, stands on the Fulda, in 51° 18′ N. lat., 9° 30′ E. long., and has a population of 26,000. It is surrounded by walls on every side except that which is bounded by the river Drusel. The town consists of the Old Town, Upper New Town, and Lower New Town, and three suburbs. The Old Town is a collection of crooked, narrow, dark, and dirty streets. It contains the market-place; the Renthof, consisting of several public offices, government buildings, and several churches; a synagogue, an orphan asylum, an hospital, an arsenal, and other public establishments. The Upper New Town is the finest quarter of Cassel, and may vie in splendour with any city in Germany. It contains several fine streets and squares; among the latter is the Friedrichsplatz, in which stands the Elector's Palace. Among other edifices in this quarter are the museum, which contains an extensive library, collections in natural history, antiquities, experimental philosophy, &c., and an observatory; the picture-gallery, theatre, hospital, poor-house, barracks, &c. The Lower New Town is the site of the Castell, an ancient structure surrounded by walls and a ditch, for the safe custody of state and military offenders: it contains a church, an orphan-asylum, infirmary, lying-in hospital, prison, &c. The town and its environs abound in beautiful promenades: among these must be mentioned the Augarten and the palace gardens, in the suburb of Wilhelmshöhe, famous for a fountain by which a column of water 12 inches in diameter is made to ascend to the height of 200 feet. Though the Drusel is navigable, Cassel is not a place of extensive commerce; it is the centre of the trade of the electorate, and the manufactures common to most large towns are carried on, but to no great extent.

CASSEL. [NORD.]

CA'SSIA, a genus of leguminous plants, consisting of a large number of species, chiefly inhabiting the tropical or temperate parts of the world, and including among them the plants that produce the Senna leaves of the apothecaries.

Cassia fistula is a small tree, with large yellow flowers growing in long loose racemes, having the aspect of a laburnum, and is found wild in India and the tropical parts of Africa. The leaves, flowers, and pulp of this plant are purgative, but they are not now much used. *Cassia acutifolia*, a small under-shrub, is found wild in Egypt, Sennaar, and Abyssinia, and forms an important article in the commerce of those countries. It is chiefly sent to Alexandria for shipment, whence it has gained the name of Alexandrian Senna among the drug-merchants. It is considered the most valuable of all the sennas. *Cassia lanceolata* is found wild in Arabia, whence it is exported under the name of Senna of Mecca.

Of the species of Cassia mentioned above either the pulp or leaves are used in medicine.

When free from adulteration, Senna furnishes a most valuable purgative medicine; but when impure, its action is accompanied with nausea, griping, and other unpleasant symptoms. It is desirable therefore to free it from impurities before administering it, or subjecting it to the action of water to form an infusion. If the infusion be made with cold water, it never gripes: this method is now much employed to form the concentrated infusions supplied by wholesale chemists and druggists to country practitioners. It requires that the water should stand twenty-four hours on the leaves, which should be kept down with a heavy weight, and the air excluded as thoroughly as possible.

CASSIA BUDS. The unexpanded flowers of a species of *Cinnamomum*, when they have attained about a fourth of their complete size, are collected and sold under this name. The taste and odour resemble cinnamon, and they are used for similar purposes. By distillation they yield a heavy yellowish-coloured oil.

CASSIANUS BASSUS. [GEOPONIKA.]

CA'SSICUS, a genus of Passerine birds, of the family *Conirostres*, allied to the Beef-Eaters and Starlings. They are distinguished, among other characters, by their large, conical, and sharply pointed beaks. The species of *Cassicus* are all inhabitants of America. They are gregarious, and feed upon grain and insects.

CA'SSIDA, a genus of coleopterous insects of the family *Cassidiadæ*. Technical characters:—Body generally somewhat oval or orbicular, and sometimes nearly square; thorax semicircular or forming the segment of a circle, the margins projecting considerably beyond and covering the head; the elytra also have the margins projecting, and forming, as it were, a kind of shield to the body; mandibles with several small notches; the anterior maxillary lobe as long as the inner one.

CASSIDIADÆ, Leach, *Cassidariæ*, Latreille, a family of coleopterous insects of the section *Cyclica* of Latreille. The species of this family are distinguished by their having the antennæ rather short, filiform or slightly thickened towards the apex, placed on the anterior part of the head, and almost close together. The legs are short and contractile; the tarsi are flattened, soft, and velvet-like beneath; the penultimate joint bilobed, the lobes completely inclosing the terminal joint; body generally very flat.

CASSINI. We have now for the second time to sketch the lives and labours of a family of distinguished men, who, though their contributions to the stock of knowledge do not rival in extent or value those of the Bernoullis, present nevertheless a succession of talent and industry which rarely occurs. From the date of its establishment

in 1670 till the time when the revolution destroyed all hereditary privileges, the Observatory of Paris passed from one Cassini to another through four generations, as though it had been transmitted by the law of property.

I. JOHN DOMINIC CASSINI was born at Perinaldo, in the district of Nice, June 8, 1625, of a respectable family which came from Siena, of which place a Cardinal Cassini was archbishop in 1426. He was educated by the Jesuits at Genoa, and there are some Latin poems of his in a collection of 1646. He attached himself to mathematics and astronomy, and also, it is said, to astrology, of which he was cured by discovering that a prediction which succeeded had been calculated wrongly. In 1641 he removed to Bologna, and in the university of that place he succeeded to the chair of astronomy. He here observed the comet of 1652, on which he published his first work. He made various observations with a gnomon and meridian line constructed in a church at Bologna. In 1657 he was deputed, with another, ambassador to the pope, on a quarrel between Bologna and Ferrara relative to the river Po, and on his return was appointed to the superintendence of the river for the former place. In 1663 he was appointed to repair the works of Fort Urban. He was at this time patronized by Pope Alexander VII., and afterwards by Clement IX. In 1664-5 he made the first of his more brilliant and useful discoveries, namely, the time of the rotation of Jupiter. He also saw, for the first time, the shadows of the satellites on the disc. By comparison of his own observations with those of Galileo, he constructed (1665) his *first* tables of the satellites. In 1666-7 he found the rotation of Mars, and in this same year he ascertained that the rotation of Venus, which is difficult to observe on account of her phases, does not differ much from that of Mars. He made the *apparent* rotation of the sun to be about 27 days, which is very near the truth. These results show considerable skill and assiduity, and made the name of Cassini very well known throughout Europe.

When Colbert founded the Academy of Sciences, in 1666, and at the same time projected an observatory at Paris, he proposed to Cassini to remove into France, and offered him a pension equivalent to his Italian emoluments. Cassini expressed his willingness to comply if the consent of the pope (Clement IX.) could be obtained; which was done on condition that Cassini's absence should not last more than two or three years. He arrived at Paris April 4, 1669, and began his duties at the observatory September 14, 1671, where his observations extend from 1671 to 1683. In 1673 the Bolognese government, which had kept all his appointments open, required him to return; but Colbert succeeded in negociating his continued stay in France, and accordingly in the same year he was naturalized in his new country, and married a French lady. He never returned to Italy, except for a short time in 1695, but remained at the head of the Paris Observatory. In the latter years of his life he was totally blind. He died September 14, 1712, without disease. In 1671-2 he discovered the third and fifth satellites of Saturn, and in 1684 the first and second. His gnomon at Bologna led him to more correct solar tables than had been in use, and to more exact values of the refraction. He gave a more complete explanation of the lunar libration than either Kepler or Hevelius, particularly in the determination of the quantities concerned; and though he did not leave the actual observations, Delambre appears to think that he established by observation the coincidence of the nodes of the lunar equator and orbit. He was the first who carefully observed the zodiacal light, which he imagines he discovered. His later tables of the satellites of Jupiter (1668 and 1693) were considerable improvements; but though in possession of facts analogous to those which led to the discovery of the motion of light, he not only did not make that discovery, but rejected it when announced by Roemer. For his arc of the meridian, his observations relative to refraction, with a multitude of other points too long to notice here, we must refer to Delambre, 'Hist. d'Astron. Mod.,' vol. ii.

We have seen that Cassini, as an observer, was no ordinary man; but as a philosopher, and as a reasoner upon the results of his observations, he deserves less praise. An obstinate follower of Descartes, we have no evidence that he ever looked into Newton; probably his mathematical knowledge was not sufficient to enable him to understand the Principia. A devoted, if not a bigoted, adherent of the church of Rome, he was a Ptolemaist long after the time when Galileo had made the speculation of Copernicus sound astronomical doctrine. His reputation in fact was altogether of a different kind from that which it ought to have been. So far as that sort of notoriety is concerned with which the public in general is most struck, Cassini and William Herschel appear to resemble each other. Nevertheless, take from the latter Uranus and six satellites, with two of Saturn, and there is left a first-rate reputation among astronomers; withdraw the similar discoveries of Cassini and he remains a commendable and even a remarkable observer, but by no means in his present rank.

II. JAMES CASSINI, son of Dominic, was born at Paris, February 18, 1677, and at 17 years of age was thought of sufficient promise to be received a member of the Academy of Sciences. He accompanied his father to Italy in 1695, and afterwards travelled in England and Holland, where he became acquainted with Newton, Flamsteed, &c. He succeeded his father at the observatory, was maître des comptes, and died April 16, 1756. He was proceeding to his estate of Thury, when the carriage was upset, and he became immediately paralytic.

His separate writings are not numerous. Some theses on optics by himself and his brother were published in 1691, but are nothing but college exercises. The others are, 'De la Grandeur et de la Figure de la Terre,' Paris, 1720; and 'Elémens d'Astronomie,' Paris, 1740.

As an observer, J. Cassini was distinguished. His determinations of the times of revolution of

the five satellites of Saturn then known are very exact; he first observed the inclination of the orbit of the fifth (now the seventh) of them. He improved the methods and tables of refraction; determined very nearly the variation of the obliquity of the ecliptic, and the length of the year by comparison of a large number of equinoxes of his own and others. He left also a great number of good observations.

III. Cæsar Francis Cassini, son of James, was born at Paris, June 17, 1714. He is generally known by the name of Cassini de Thury, having been the first to take a territorial appellation from the estate acquired by his father or grandfather. He accompanied his father during his geodesical operations in 1733, and was received member of the academy at the age of 21. He succeeded his father as director of the observatory, and as maître des comptes, and died September 4, 1784, of small-pox. His most remarkable labour is the large triangulation of France, published in 1744, under the title of 'La Méridienne, &c., verifiée,' &c., Paris.

IV. John Dominic Cassini, son of Cassini de Thury, and most commonly known by his title of Count, was born at Paris, June 30, 1748, and died October 5, 1845. He is the first of his family who decidedly adopted the system of Newton, though the same may perhaps be said of Cassini de Thury, from some isolated passages in his writings. He was elected member of the academy in 1770, in which year he published the account of a voyage made by order of the king, for trial of the chronometers of Le Roy. He was employed in 1787 with Méchain and Legendre, in the operations for the junction of the observatories of Paris and Greenwich by a chain of triangles. He made repeated endeavours to induce the government to re-establish the observatory upon a new footing and with large instruments. The National Convention, apparently with the desire to force him to resign, resolved, in 1793, that the observatory should be placed no longer under the control of one person, but of four, who should take annual duty in rotation. Of the four the Count Cassini was one, and the other three were his own pupils. To this he refused to submit, and resigned his charge September 6, 1793. He received an order to quit the observatory in 24 hours; and in the following year was imprisoned for seven months. From that time he abandoned astronomy entirely, refusing either to take part in the great survey, or to belong to the Bureau des Longitudes, or to the Institute, though he entered the latter body under the empire. He fixed himself on his own estate, and devoted himself to the duties of the conseil of his department. His son, the fifth of the name, began an astronomical career in 1798, aged 16, but soon relinquished this pursuit for that of botany. He was a judge of the cour royale, and died of the cholera at Paris in 1832, during the prevalence of that disorder.

We have thus the history of the occupation of an observatory by the members of one family for 122 years, and in spite of the deserved reputation of all the observers in question for talent and assiduity, it must be asserted that the hereditary system did not succeed. Delambre remarks with some bitterness, that during the whole of the reign of the Cassinis, not 'one little catalogue of stars' issued from the national observatory. Picard had proposed the erection of large instruments, and the observation of right ascensions and declinations. To this Dominic Cassini was opposed, and, in the usual course of things, such an error would have lasted for his life, and would have been repaired by his successor. But when the first Cassini was followed by a second, and a third, wedded to the ideas of their common ancestor, there could be no improvement; and the consequence is that the observatory of Greenwich, for the same period, bears away the palm from that of Paris in actual use to astronomy.

CASSIODO'RUS MAGNUS (or, as some call him, MARCUS) AURELIUS, who lived in the sixth century, was a man of letters, an historian, and a statesman. Among other works he composed a history of the Goths in twelve books, which is only extant in the abridgment of Jornandes. Twelve books of his letters are extant, which extend from A.D. 509 to 539. Cassiodorus enjoyed a high reputation among his contemporaries for learning, eloquence, and talent; but his Latin is impure, and his style full of the conceits of the age.

He was born in South Italy, probably about A.D. 470. His father, also named Cassiodorus, was high in office under Odoacer and Theodoric; and he himself was early introduced to public life, and obtained the confidence of Theodoric, under whom he filled the offices of secretary and quæstor. By Theodoric's successors he was appointed master of the offices and prætorian prefect. He finally retired from the world, and founded the monastery at Viviers, in Calabria, where he lived nearly to the age of 100 in devotional retirement. The best edition of his works is that of Garet, Rouen, 1679, in 2 vols. fol., reprinted at Venice.

CASSIOPEIA. This constellation is called Cassiepeia (*κασσιέπεια*) by Aratus, and Cassiopea by Manilius. In the Greek fable, Cassiopeia is the wife of Cepheus and mother of Andromeda, placed in the heavens with her head from the pole, so as to turn round apparently upside down, because (according to Hyginus) she boasted of her own beauty as superior to that of the Nereids. This constellation may be found by looking on the side of the pole opposite to the Great Bear, where will be seen five rather bright stars disposed in something like an M.

CASSIQUIARI. [Amazon; Brazil.]

CASSIS. [Bouches-du-Rhône.]

CASSITE'RIDES, a group of islands generally supposed to be the Scilly islands. They are first mentioned by Herodotus (iii. 115), who professes however his entire ignorance of them. Strabo (iii. 175, ed. Casaub.) describes them.

The Greek name of the metal 'tin,' which is cassiteros (*κασσίτερος*), occurs in the 'Iliad' of Homer, and the name of the islands is obviously derived from the name of the metal. Cassiteros however may not be a genuine Greek word.

CA'SSIUS, LONGINUS, was the quæstor of

Crassus, in the unfortunate campaign against the Parthians, B.C. 53, and he was one of the few who escaped into Syria. [CRASSUS.] Succeeding to the command of that province, he held out Antioch against the Parthians, and drove them for a time across the Euphrates. Upon the arrival of the proconsul Bibulus, B.C. 51, Cassius returned to Rome.

After the battle of Pharsalia, B.C. 48, he was in the service of Pompeius, commanding a fleet in the Hellespont, which he surrendered to Cæsar. He was one of the prime movers in the conspiracy against Cæsar, B.C. 44; and he was chiefly instrumental in drawing M. Junius Brutus, whose sister he had married, into the plot. He had shared in Cæsar's favours, having been appointed by him to a prætorship, and to the government of Syria. Cassius, who had passed into Greece with Brutus, no sooner heard of the attempt of Antonius at Rome to transfer his province to Dolabella, than he hastened into Asia, and speedily collected forces, with which he mastered Syria, Phœnicia, and Judæa; and he was on the point of invading Egypt, when Brutus summoned him to return towards Europe, to make head against the triumviri. After plundering Rhodes (B.C. 42), he joined Brutus at Sardis, and the united army marching through Thrace into Macedonia, encountered Antony and Octavianus in the plain of Philippi. Cassius wished to avoid a battle as long as possible, being aware that the enemy must soon become straitened for provisions, but he yielded to the opinion of Brutus. In the first battle he commanded the left wing, and was opposed to Antonius. Brutus was successful with the right wing; but pursuing his advantage too far, he exposed the flank of Cassius, who was compelled to quit the field. He retired to a tent, where he was found dead. The story is that a freedman slew him by his order.

Cassius was one of the best generals of the age: his temper was stern, and he professed a warm attachment to the republican cause. He has not escaped the imputation of being influenced by private enmity in his hostility to Cæsar. In his philosophical opinions, he belonged to the Epicureans.

(Plutarch, *Lives of Crassus, Cæsar,* and *Brutus.*)

CA'SSIUS, AVI'DIUS, was, according to Dion Cassius, a native of Cyrrhus in Syria, and the son of a rhetorician, Heliodorus, who was præfect of Egypt in the joint reign of Antoninus Pius and Marcus Aurelius. Cassius served in the Parthian wars (A.D. 162 or 165) under Lucius Verus, in which he defeated Vologesus, and took Seleuceia and Ctesiphon on the Tigris. He also served on the Danube, probably about A.D. 166. He was subsequently appointed governor of Syria, and in A.D. 170 he went to Egypt to suppress an insurrection in the lower country. He succeeded in putting an end to the rebellion; but a few years after (A.D. 175) he himself rebelled against the Emperor Marcus Aurelius, and proclaimed himself Imperator in the East. Cassius was assassinated in a few months, and his head was carried to Aurelius. The family and children of Cassius were spared by Aurelius. (Vulcatius Gallicanus, *Avidius Cassius;* Dion Cassius, lib. lxxi.; Tillemont, *Histoire des Empereurs,* vol. ii.)

CASSIVELAUNUS. [BRITANNIA.]

CASSOWARY. [STRUTHIONIDÆ.]

CASTAGNO, ANDREA DEL, a Florentine painter, was born at Castagno, near Florence, about 1409, and died aged about seventy-four. He was the first Florentine painter to adopt the new method of oil-painting, which he learnt from Domenico Veneziano, and whom, after he had mastered the secret, he basely murdered. [VENEZIANO, DOMENICO.] Very few of Castagno's works now remain. In 1478, the Pazzi, and other conspirators concerned in the murder of Giuliano de' Medici, were all painted by Castagno, hanging by the feet on the façade of the palace of the Podestà. It was his best work, but it has long since perished. (Vasari, *Vite de' Pittori,* &c.; Baldinucci, *Notizie dei Professori del Disegno,* &c.)

CASTALIO'N or CHASTEILLO'N, SEBASTIEN, was born in Dauphiné about 1515. He applied early to the ancient languages, and became a great proficient in Greek and Hebrew. About 1540 Calvin invited him to Geneva, and had him appointed to a chair in the college of that city. After two or three years, Castalion having become obnoxious to Calvin on account of some of his opinions, which were not in accordance with Calvinistic orthodoxy, left Geneva for Basel, where he employed himself in teaching Greek and in writing several works, chiefly on Scriptural subjects. Before he left Geneva, he had undertaken a complete Latin version of the Bible from the Hebrew and Greek, which he completed at Basel, where it was published in 1551, and dedicated to Edward VI. of England. He published a French version of the same in 1555. He passed his latter years at Basel in great poverty, and died in 1563, leaving a numerous family in want. In his latter years he was in the habit of resorting to the banks of the Rhine or of the Birs when swollen, where with a crook he endeavoured to catch the pieces of wood and branches of trees which the river carried along, in order to procure fuel for his family. This was made the subject of a charge by Calvin, as if he had been guilty of pilfering. Among his works is a treatise to prove that magistrates have no right to punish heretics. (Bayle's *Dict.*, edit. 1730, art. *Castalion.*)

CASTA'NEA, the botanical name of the plants which produce sweet chestnuts. From the similarity in their name one would be disposed to believe that the genus to which horse-chestnuts belong was nearly related to this; they are however extremely different in every thing except the unimportant circumstance of the fruit of both being prickly.

In all Spain, the southern parts of France, Italy, and the adjacent countries, sweet chestnuts, either raw, or roasted, or ground into flour, or prepared in some other way, form a common article of diet. It is however not the wild Castanea which furnishes the nuts that are principally consumed in the south of Europe, and exclusively exported to more northern countries, but a number of cultivated varieties, the nuts of which are

larger, and the seeds sweeter. The sweet chestnut in its wild state acquires an unusual size; on Ætna, where it constitutes forests, there are trees of great antiquity and of enormous size. The wood of the chestnut is well suited for paling or piles, as it resists well the influence of water; it is also used for mill-timber and for water-works, but it is not in this country of much importance.

CASTANOSPE'RMUM, a remarkable genus of leguminous plants, the only known species of which is described as forming a tree thirty to forty feet high, in the forests near Moreton Bay in Australia. The shade afforded by the foliage is said to excel that of most Australian trees. 'By the natives the seeds are eaten on all occasions; they have when roasted the flavour of a Spanish chestnut, and travellers assert that Europeans who have subsisted upon them have experienced no other unpleasant effect than a slight pain in the bowels, and that only when the seeds are eaten raw. They are however hard, astringent, and not at all better than acorns.

CASTEL, CASTELLO, a component part of the names of many French, Italian, and Spanish towns. It is derived from the Latin *castellum*, which originally meant a *fort* or *castle*, but came afterwards to be applied to the village or collection of houses that rose in course of time round the fort. Many of these villages have become large towns. The following are described under the articles referred to:—Castellamare [NAPLES, Province of; TRAPANI], Castel-Gandolfo [ALBA LONGA], Castel-Jaloux [LOT-ET-GARONNE], Castellamonte [TOREA], Castelnuovo-di-Scrivia [TORTONA], Castel-Sardo [SARDEGNA], Castelnau [TARN; LOT], Castel-Sarrasin [TARN-ET-GARONNE]. Another form of the same prefix is Castiglione or Castillon.

CASTELNAUDARY. [AUDE.]

CASTES. [HINDUSTAN.]

CASTI, GIOVAN' BATISTA, was born in 1721, in the Roman State. He studied at Montefiascone, and afterwards took priest's orders. Little is known of his early life till 1762, when he published 'I Trè Giuli,' a series of 200 sonnets on the subject of a debt which the author describes himself as having incurred, amounting to three giuli, or paoli, a Roman coin worth about five pence. A rich vein of humour runs throughout the whole composition. The 'Trè Giuli' have been translated into English, London, 1826. In 1765 Casti went to Florence, where he found favour with the Grand Duke Leopold and his court. When Joseph II. visited Florence, in 1769, he invited Casti to Vienna. In 1778 he went to Russia, where he was introduced to Catherine II., and where he conceived the plan of his 'Poema Tartaro,' which contains a satire on that empress and her court under fictitious names. He afterwards returned to Vienna, where he obtained the situation of Poeta Cesareo, or court poet, vacant by the death of Metastasio in 1782. He there composed some burlesque dramas. About the time that the French entered Italy in 1796, Casti left Vienna for Milan, where he showed himself a warm partisan of republicanism. He lived afterwards some time at Florence; and lastly, in 1798, he visited Paris, where he remained till his death in February 1803. At Paris he published, in 1802, his 'Animali Parlanti,' a poem which is his chief title to fame. It is a satire on political society in general, in which the author lashes demagogues as well as courtiers. It has been partly translated and partly imitated by W. Stewart Rose in his 'Court and Parliament of Beasts,' London, 1819. Casti had much of the humour peculiar to Berni's school [BERNI], of which he may be considered as one of the latest specimens. A complete edition of his 'Novelle Galanti' was published in 3 vols. 8vo., Paris, 1804. They are humorous stories in verse, and the subjects are much after the fashion of Boccaccio's tales, written in a fluent style, but mostly licentious.

CASTIGLIONE BALDASSA'RRE, was born of a noble family of Mantua, in 1478. He studied at Milan, and after serving for some time under Francesco Gonzaga, duke of Mantua, he attached himself, about 1503, to the court of Guidobaldo di Montefeltro, duke of Urbino, who was a patron of literature. During his residence at Urbino he enjoyed the company of Bembo, Bibbiena, Giuliano de' Medici, and other distinguished men who graced that little court. In 1506 he was sent by the duke to England on a mission to Henry VIII., who was pleased with him, and made him a knight. After Duke Guidobaldo's death, he served his successor, the Duke of Mantua, and Pope Clement VII. in a variety of missions. He died at Toledo, in Spain, in Feb. 1529.

The principal work of Castiglione is his treatise, in the form of a dialogue, 'Del Cortigiano,' which has been much and long admired in Italy, both for the thoughts and the style, and it still ranks among the classical works of the 16th century. Castiglione wrote also poetry, both Latin and Italian: his 'Lettere,' or correspondence, were published by Serassi, in 1769, 2 vols. 4to., with a biography of the author.

CASTIGLIO'NE, GIOVANNI BENEDETTO, called by the French *Le Benedette*, and at Mantua *Il Grechetto*, was born at Genoa in 1616. He was one of the most distinguished of the Genoese painters, and an admirable etcher.

Castiglione painted in various styles, as history, portrait, landscape, and animals. He excelled in all, but most in animal painting and in pastoral landscape; in animals he has not had a superior in Italy. His masterpiece is the Nativity of the Saviour in the church of San Luca, and it is one of the finest pictures in Genoa; there is an etching of it by himself. He died at Mantua in 1670.

Castiglione executed a considerable number of etchings, which are very highly valued; many of them are much in the style of those of Rembrandt. For execution, three of his best etchings are—the Discovery of the Bodies of St. Peter and St. Paul, a night-piece; Diogenes in search of an Honest Man; and Melancholy.

The majority of his paintings are small, and the figures introduced into them are seldom very excellent; he is also sometimes inharmonious in his colouring, and heavy in his shadows.

(Soprani, *Vite de' Pittori, &c., Genovesi*; Lanzi, *Storia Pittorica*, &c.; Bartsch, *Peintre-Graveur*.)

CASTI'LLA (Castile), the name of one of the two kingdoms by the union of which the present Spanish monarchy was formed. As the Christian population which had taken refuge in ASTURIAS gradually made acquisitions of territory from the Moors [SPAIN; MOORS], they built numerous forts or castles (*castillos*) for the defence of the recovered territory, which, from this circumstance, got the name of *Castilla*. Castilla at first was governed by counts, who were dependent on the kingdom of Leon; but in the eleventh century it became a separate kingdom, which by degrees extended over the greater part of Spain, embracing, besides the provinces which are still called Castilla, the original kingdom of Leon and Asturias, Galicia, Estremadura, and lastly, Andalusia, after the final expulsion of the Moors. The kingdom of Castile was united to that of Aragon in 1474, in consequence of the marriage of Ferdinand the Catholic to Isabella of Castile, which event took place in 1469; but the two kingdoms remained under separate administrations till the death of Isabella in 1504.

CASTILLA LA NUEVA (*New Castile*), a large province in the centre of Spain, is bounded N. by Castilla la Vieja, E. by Aragon and Valencia, S. by Murcia and Andalusia, and W. by Estremadura. It lies between 38° 25′ and 41° 13′ N. lat., 1° and 5° 25′ W. long. Its greatest length from E. to W. is about 250 miles; from N. to S., 195 miles. From the mountain-knot of Moncayo, mentioned in CASTILLA LA VIEJA, a ridge runs directly south along the western borders of Aragon, and entering Castilla la Nueva, near the source of the Tajo, takes the name of Sierra Molina, which, with its continuation, the Montañas de Toledo, crosses the province in a south-west direction, joining the Sierra de Guadalupe in Estremadura. These mountains divide the province into two extensive plains, the more northern of which, lying between the Montañas de Toledo and the sierras that separate Old and New Castile, has a uniform inclination from E. to W., and is watered by the Tajo and its tributaries. The southern plain, which is separated from Andalucia and Murcia by a line of sierras, broken by many abrupt gaps, and best known under the name of the Sierra Morena, has not a uniform inclination. The eastern part of it slopes from N. to S., the Jucar and its tributaries escaping to the Mediterranean through gorges in the mountains on each side of the Sierra Muela; while the Guadarmena, rising nearly in the centre of this plain, runs first E., then S.S.W., parallel to the Sierra de Alcaraz, through a gap west of which it makes its way to the Guadalquivir, a tributary of the Atlantic. The Jandula also and some other feeders of the Guadalquivir rise on the northern side of the Sierra Morena. The rest of the plain slopes towards the west, and is drained by the Guadiana and its tributaries.

The plains of New Castile are among the finest wheat districts in the world; in La Mancha and Toledo the annual produce of wheat amounts to about 2,000,000 quarters; but being without trees, hedges, or inclosures of any kind, and deficient in springs, the plains have a monotonous and cheerless appearance. The mountains abound in picturesque and fertile valleys, and afford plentiful pasture to the numerous flocks of this and the neighbouring provinces, [MESTA.] Timber and fuel wood are scarce and dear, except in the neighbourhood of the mountain forests, which, though capable of affording an abundant supply, are not approached by good roads. The want of roads, canals, and navigable rivers, is severely felt. Almost the only means of transport for all kinds of produce is by mule-back. As in Old Castile, there are few isolated homesteads, the people live in hamlets, often several miles apart, and in too many instances a long way from their farms. Agriculture is in a backward state and not so much attended to as sheep-feeding. The principal objects of cultivation besides wheat are saffron, oil, fruits, wines, hemp, silk, and *garbanzos*, a sort of pea much used for food. The province is rich in minerals; but mines of iron, salt, and quicksilver are the only ones worked. The climate is dry and healthy; very hot in summer, during which many of the streams become dry, and the pastures in the plains lose all appearance of vegetation. The winters are cold. Rain falls chiefly in the spring and autumn. The manufactures are confined principally to articles of common use.

The area and population of the province are distributed among the 5 presidios or departments, into which it is divided, as follows:—

Departments.	Area in sq. miles.	Pop. in 1834.
Madrid	1,330	297,812
Toledo	8,863	485,203
Guadalajara . .	1,970	157,338
Cuenca	11,410	382,577
Ciudad Real, or La Mancha . .	7,620	257,210
Total . . .	31,193	1,580,140

The department of Madrid is bounded W. and N. by Segovia, N.E. and E. by Guadalajara and Cuenca, and S. by Toledo. Its rivers are—the Tajuña, which, rising in the Sierra Solario in the south of Soria, flows S.S.W. past Brihuega, and falls into the Jarama a little S. of the city of Madrid; the Henares, which rises in the eastern part of the Somo-Sierra, flows S.S.W. and enters the Jarama below Alcalà; the Jarama, which, rising in the Somo-Sierra near Buytrago, flows S., receiving the above rivers on its left bank and the Manzanares on its right, enters the Tajo a little below Aranjuez; and the Guadarrama, which flows S. from the Sierra de Guadarrama, and enters the Tajo below Toledo.

The capital of the department is MADRID. In the north of the department, on the slopes of the Sierra de Guadarrama, is Escorial, a town of 2000 inhabitants, which has grown up round the magnificent monastery of San Lorenzo, founded here by Philip II. The monastery of Escorial, the ground-plan of which is in the form of a gridiron, contains a fine collection of paintings; a library

rich in ancient and especially in Arabic manuscripts; and vaults, in which are the tombs and monuments of the kings and queens of Spain. A royal residence is attached to it. The grounds are beautifully laid out, planted with trees, and adorned with fountains. [ALCALA DE HENARES.]

The department of Guadalajara is bounded N. and N.E. by Segovia and Soria, S.E. by Cuenca, and S. and W. by the department of Madrid. It is drained by the upper courses of the Jarama and its feeders before mentioned. Sheep, goats, and swine are very numerous. A good deal of honey is gathered. Iron mines are worked; lead, magnesia, and marble are found.

The chief town, Guadalajara, is on the Henares, 33 miles N.E. of Madrid, and has a population of 7000. The town is large and ill-built, but contains several imposing edifices, among which are the fine old palace of the Mendozas, 8 churches, and a royal cloth manufactory. Brihuega, an old town on the right bank of the Tajuña, has 5000 inhabitants. These towns stand in the district of ALCARRIA. Siguenza, an ancient episcopal town, stands in the north-east of the department, on the left bank of the Henares. It possesses a large Gothic cathedral richly decorated in the interior, and containing many magnificent monuments; 3 other churches, a college, and 2 hospitals. The population is 5000.

The department of Cuenca is bounded N. by Soria and Guadalajara, E. by Aragon and Valencia, from which it is separated by the Sierra Molina, the Sierra de Albarracin, and its continuations to the Sierra Muela, S. by Murcia and La Mancha, and W. by Toledo and Madrid. The greater part of the surface is mountainous. The Sierra Molina runs S.W. into the centre of the province, where it divides into two ridges, one running W. to the Montañas de Toledo, the other, called Sierra de Cuenca, running S. to the Sierra de Alcaraz, in the south-east of La Mancha, and forming the watershed in this part between the tributaries of the Mediterranean and the Atlantic. The south-eastern portion of the department is traversed by offshoots from the Sierra de Albarracin. The north of the department is crossed by the Molina, which rising in the Sierra Molina enters the Tajo on the confines of Cuenca and Soria. The Tajo, springing also from the Sierra Molina, crosses the department and separates it from Soria and Guadalajara on the north-west. The Cuervo and Guadiela, rising in the same chain, unite their waters, and enter the Tajo at the point where it ceases to form the north-west boundary. The south-west of the department is drained by the Zancara, which springing from the Sierra de Cuenca, and receiving the Rus on its left bank, joins the Giguela, a feeder of the Guadiana. The Jucar, which drains the south-east of the department, rises near the source of the Tajo, flows along the eastern side of the Sierra de Cuenca, and, receiving the Jara on its left bank, turns E. and enters Valencia, where it is joined by the Cabriel (which is itself fed by the Guadazaon and the Moya), and enters the Mediterranean at Cullera, being increased a little W. of this town by the Magro, which drains the valley E. of the Sierra Muela. Among the minerals must be mentioned the jasper quarries near Cuenca.

The chief town, Cuenca, stands on a high hill not far from the Jucar, and has a population of 8000. It is the seat of a bishop, and has a large, handsome, and richly decorated cathedral. The town is surrounded by walls, is well supplied with water, and has some woollen factories, paper-mills, and establishments for washing wool. In the south of the department are the following towns with their population annexed:—San Clemente, 4000; Hiniesta, or Iniesta, 4300; Tarazona, 7000; Utiel, E. of the Magro, 6000; a little N. of this town, at Minglanilla, there are large salt mines; and Requeña, S.E. of Utiel on the road to Valencia, which is fortified, and has 11,000 inhabitants, and some important silk manufactures. In the north of the department are—Huete and Sacedon, each with a population of 3000; and Molina, population 4000.

The department of La Mancha, or Ciudad Real, is bounded N. and N.E. by Toledo and Cuenca, E. and S.E. by Murcia, S. by Andalusia, and W. by Estremadura. The east of the department is crossed by the Sierra de Alcaraz; the south is covered by offshoots from the Sierra Morena, and the north by those of the Montañas de Toledo. The central part forms the great plain of La Mancha. It is drained by the Guadiana, which rises in about 39° N. lat., and having made a curve towards the south runs north-west past Argamasilla; below this it flows underground for about 15 miles, and reappears through a series of small lakes called Ojos de Guadiana ('eyes of the Guadiana') a little above the town of Daymiel, near which it receives the Giguela on the right bank, and the Azuer on the left; hence its course is west till it receives the Combron, when it turns south, and takes in the waters of the Jabalon on its left bank; it then again turns west, and, having received the Bullaque from the right, separates for several miles Toledo from La Mancha and Estremadura. During its course in the department no part of it is navigable. [ESTREMADURA.] The east of the department is drained by the Guadarmena before mentioned, and the Madera and Mundo, which rise in the Sierra de Alcaraz, and run towards the Mediterranean. The wines of Almagro and Val de Peñas are in high repute. Mules and asses of the greatest beauty are numerous, as are also sheep, horned cattle, pigs, and bees. Copper, lead, iron, silver, sulphur, rock-salt, and mercury are found; mines of salt and quicksilver alone are worked.

The chief town, Ciudad Real, stands in the plain between the Jabalon and the Guadiana, on the road from Madrid to Cordova. It is surrounded by walls, is tolerably well built, and has 10,000 inhabitants. In the Plaza Mayor there is a large inclosed space fitted up for bull-fights. The town has three fine churches, a college, and five hospitals, one of which, founded by Cardinal Lorenzana, is a noble building. A great fair for cattle, mules, and asses is held yearly. In the west of the department are ALMADEN, famous for its quicksilver mines; Argamasilla de Alva, which deserves mention as the place of imprisonment of

Miguel Cervantes when he wrote the first part of 'Don Quixote,' and which he indicates as the native place of his hero; ALMAGRO, which has 8000 inhabitants; Val de Peñas, a large well-built town, with 10,248 inhabitants, who are chiefly engaged in agriculture. East of Ciudad Real are Daymiel, population 3000; Manzanares, population 9000; Solana, population 8300. To the north of the source of the Guadiana are Bonillo, with 2000 inhabitants; Villa Robledo, population 7000; and Quintanar, population 3000. In the south are Villa Nueva de los Infantes, population 8000; Santa Cruz de Mudela, with a population of 5500, which stands a few miles N. of the Puerto Despeñaperros, a pass in the Sierra Morena, considered to be the key of Andalusia; and Alcaraz, population 3500.

The department of Toledo is bounded N. by those of Avila and Madrid, E. by Cuenca, S. by La Mancha, and W. by Estremadura. All the southern part is covered by the Montañas de Toledo and their offshoots. The department is drained by the Tajo [ESTREMADURA] and its tributaries. To the feeders of the Tajo from the north, before mentioned, are to be added the Alberche, which rises in the Sierra de Avila, and enters the Tajo E. of Talavera la Reyna, and the Tietar, which, rising in the same sierra, crosses the north-western angle of Toledo, and joins the Tajo in Estremadura. The feeders of the Tajo on the south are the Cedron and the Algodar, which unite and fall in E. of the city of Toledo; the Guadajaraz, the Cuevas, the Toreon, the Sedana, the Pusa, the Gebalo, and the Ibor. These last-mentioned rivers rise in the Montañas de Toledo. Neither the Tajo nor any of its feeders are navigable within New Castile. The south-east of the department is drained by the Giguela before mentioned, and its principal feeder the Rianzares.

The chief towns are TOLEDO; ARANJUEZ; Ocaña, a place of some manufacturing industry, which has 5000 inhabitants; Tarancon, near the right bank of the Rianzares, population 4200; Talavera la Reyna, on the right bank of the Tajo, which is surrounded by walls flanked with towers, and entered by several gates; it contains eight churches, a college, and a population of 7700; the environs were the scene of a battle between the French, under Marshal Victor, and the Anglo-Spanish army, under Lord Wellington and General Cuesta, on the 27th and 28th of July, 1809, when the former were defeated, and on their retreat pillaged the town; and Sonseca, population 6000. On the south-eastern slopes of the Montañas de Toledo are Consuegra, population 5500; Madridejos, which has 7000 inhabitants; Herencia, population 8000; Villacañas, near the right bank of the Rianzares, population 5600; and Alcazar de San Juan, which has royal saltpetre works and gunpowder mills.

(Miñano, *Diccionario Geografico de España*; Laborde, *Itinéraire de l'Espagne*; *Dictionnaire Géographique*; *Maps of the Society for the Diffusion of Useful Knowledge*; Ford's *Hand-book of Spain*.)

CASTILLA LA VIEJA (*Old Castile*), a large province in Spain, is bounded N. by the Bay of Biscay, W. by Asturias and Leon, S. and S.E. by Castilla la Nueva, and E. by Aragon, Navarra, and the Basque Provinces. It lies between 40° 7′ and 43° 32′ N. lat., and 1° 40′ and 5° 35′ W. long. Its shape is very irregular; the greatest length from N. to S. is about 220 miles, the greatest breadth about 130, but the width in some places is not so much as 30 miles. The province presents elevated plains, separated by ranges of lofty mountains, and drained by numerous rivers. The northern part of the province extends for about 70 miles along the Bay of Biscay, and is crossed by the Asturian or Cantabrian range of mountains, which runs nearly parallel to the Bay, and at a distance of about 25 miles from it. This portion of the province constitutes the department of Santander; it is covered with high mountains, which are furrowed by deep narrow and fertile valleys that are drained by rapid streams, all falling into the Bay of Biscay, and forming at their mouths commodious harbours for small craft. The principal rivers are the Deba, the Saja, the Besaya, and the Ason. Maize, wheat, and wine of inferior quality are produced. The high lands contain fine pasturage, and in many places are covered with forests of chestnuts, oak, pine, and fir. A great deal of butter is made. Goats are very numerous. Iron of the best quality is obtained.

On the eastern boundary of the province there is a high bare sandstone mountain-knot called Moncayo, from which a range runs N.W., and joins the Asturian Mountains, a little W. of Reynosa. This range, called Sierra de Oca, separates the basin of the Ebro from that of the Duero. On the eastern side of this sierra, the country is very mountainous, but contains many fertile valleys and high plains, in which corn, wine, and all kinds of fruits, except oranges and lemons, are produced. This portion of the province forms the northern part of the departments of Burgos and Soria. Its rivers all flow into the Ebro, which crosses the N. of Burgos, and forms the north-eastern boundary of Burgos and Soria. The principal of them are the Oca, the Tiron, and the Oja, which last gives name to the fertile district of Rioja (Rio Oja), comprising a large portion of both departments along the Ebro. Sheep, mules, pigs, asses, and horned cattle are very numerous, and form the principal wealth of the country. The mountains are cold and wild, but in summer afford excellent pasturage; and in many places they are covered with forests of chestnut, fir, and pine. Iron and other minerals abound, but no mines are worked.

From Moncayo another range, which rises in some places to upwards of 9000 feet above the sea, runs S.W. under the various names of Sierra de Deza, Somo-Sierra, Sierra de Guadarrama, and Sierra de Avila, and joins the lofty Sierra de Gredos in the north-west of Estremadura. This ridge forms the watershed between the Duero and the Tajo, and, for part of its length separates the provinces of Old and New Castile. A narrow strip at the south-eastern angle of Old Castile extends S. of the Sierra de Deza as far as the Tajo, and forms the southern termination of the department of

Soria, which is thus seen to stretch from the Ebro to the Tajo. At the south-west also the province crosses over the Sierra de Avila into the basin of the Tajo, that part of it which is drained by the Alberche and the upper Tietar forming the southern portions of the departments of Avila and Segovia. To the north of this line of sierras extends the great plain of Old Castile, which is drained by the Duero and its numerous tributaries, the northern part of it belonging to the department of Burgos, which extends south nearly to the Duero; the eastern part, which is hilly, to that of Soria, while the south and western portions of it form the greater part of the departments of Segovia and Avila. The general height of the plain is about 3000 feet above the sea. The principal feeders of the Duero [DOURO] are the Uzero: the Arlanza, which runs from E. to W., parallel to the chain of mountains that separates the plain of Old Castile from that of Burgos: at the western extremity of the chain it turns S.W. and falls into the Pisuerga, the largest tributary of the Duero: the Piron and the Cega, which unite and fall into the Duero on the left bank: and the Adaja, which rises in the Sierra de Avila, and, receiving the Eresma and other streams, flows N. into the Duero, a little E. of Tordesillas. In summer the smaller rivers of this plain are reduced to mere brooks, but during the spring and autumn rains they are impetuous torrents. The climate is excessively cold in winter, and in summer the heat is scorching. A cold boisterous wind blows in October, and snow covers the ground often for three months, and rests on the summits of the mountains for a great part of the year. The surface is of a truly monotonous unrefreshing character: it is arid, without meadow, spring, or tree, covered with a scanty vegetation, which in summer almost entirely disappears; tillage is little attended to, care being paid rather to the rearing and feeding of sheep, the number of which is very great. In summer the mountain pastures of the sierras are frequented by countless numbers of migratory sheep, which remain here till the beginning of October, when they commence their return to Andalusia for the winter. [MESTA.] The inhabitants live in hamlets, which are often several miles distant from each other. The want of wood for fuel is greatly felt; yet the Castilian, from some unaccountable prejudice against trees, never plants any. The offshoots of the mountains on the borders of the plain are covered with underwood and evergreens, and in many places with extensive forests; and in the sheltered parts peas, wine, wheat, and oil are abundantly produced. The manufactures of Old Castile are confined to coarse woollens, cotton, linen, leather, and glass. Though agriculture is in a very backward state in all the departments, yet a good deal of wheat is exported from the province.

In the following account of the province the newly formed department of Logroño is not treated of separately, because the latest returns do not give either its area or its population.

The surface and population are thus distributed among the 5 departments into which the province is divided:—

Departments.	Area in square miles.	Population in 1834.
Burgos and Santander	7752	611,762
Soria . . .	4118	267,537
Segovia . . .	3502	221,379
Avila . . .	2600	153,479
Total .	17,972	1,254,157

In the department of Santander, the chief town is Santander, which is the principal seaport of Old Castile. It is a well-built town, with a capacious well-sheltered harbour, deep enough for large vessels. It is a place of considerable commercial activity, and carries on an extensive trade with Cuba, to which it exports flour ground at the large mills in the neighbourhood. Wool is exported to England and other countries. The imports consist chiefly of colonial produce. The town is the seat of a bishop, and has 19,000 inhabitants. Santoña, east of Santander, is a small fortified town on the coast; it has a safe harbour, an active coasting trade, and profitable fisheries. Laredo, farther east, has 3000 inhabitants; the harbour, by which Charles V. entered Spain after his abdication, is now nearly blocked up with sand. Santillana, a pretty town in a rich valley on the Besaga, a feeder of the Besaya, has 2400 inhabitants.

Of the department of Burgos, the capital is BURGOS. Aranda de Duero, a fortified town, stands in a rich wine district, on the right bank of the Duero, and has 4500 inhabitants. Lerma, on the left bank of the Arlanza, has a fine old palace built by the cardinal duke of Lerma. Haro stands at the foot of a hill, near the right bank of the Ebro, and has 7000 inhabitants; wine, fine pottery, hats, brandy, liqueurs, and leather are the chief industrial products. Briviesca is a walled town on the left bank of the Oca. Miranda de Ebro on the right bank of the Ebro, which is here crossed by a stone bridge with 6 arches, has about 3000 inhabitants. Espinosa de los Monteros on the left bank of the Trueba, a feeder of the Nela, which empties itself into the Ebro a little below the junction of the Oca with that river, has 2000 inhabitants.

Soria, the capital of the mountainous department of Soria, stands on the right bank of the Duero, about 30 miles from its source near the site of the ancient Numantia, in 41° 34′ N. lat., 2° 24′ W. long. It is surrounded by a thick wall, and formerly had a strong citadel, which is now in ruins. The town has 7000 inhabitants, who are engaged in agriculture and sheep-feeding; a great deal of corn is produced in the plains about this town. Agreda, at the foot of Moncayo, has 3500 inhabitants. Arnedillo, N. of Agreda, has warm baths, which are greatly frequented from June to September. Alfaro, S.E. of Logroño, on the left bank of the Ebro, stands in a fertile country, and has 5000 inhabitants, who are engaged in agriculture and in the manufacture of soap and leather; the town is walled, and is entered by four gates. [CALAHORRA.] Logroño, in a fertile plain on the

right bank of the Ebro, which is here crossed by a fine bridge, has 10,000 inhabitants. It is surrounded by walls, outside of which there are two suburbs: it is a well-built place, and is a favourable specimen of an inland Spanish town. There is a college and a theatre here, and some manufactures of leather, hats, and brandy. The plains about the town are very fertile in corn. Osma, on the Uzero, has 1000 inhabitants, and is the seat of a bishop. Almazan, E. of Osma, on the Duero, has a population of 2000.

Segovia, the capital of the department of Segovia, stands on a rocky eminence between two deep valleys, one of which is watered by the Eresma. It is a very ancient city, and was the residence of the early kings of Castile. It contains many remarkable buildings, among which must be named the vast Gothic cathedral, which has a tower 330 feet high; the Alcazar, formerly the residence of the Moorish governors, which is now converted into a military college; and, above all, the magnificent Roman aqueduct, which consists of two tiers of arches built of granite without cement, and is in a state of great perfection. Segovia is the seat of a bishop, has a mint, and a population of 13,000; it has been long famous for its cloth manufactures. San Ildefonso, on the northern slope of the Sierra de Guadarrama, has 5000 inhabitants, and is famous for its manufacture of glass, and still more so for the splendid palace and grounds of La Granja, which is one of the seats of the Spanish kings, and the highest royal residence in Europe, being 3840 feet above the sea-level. Sepulveda, an ancient and decayed town of under 2000 inhabitants, is beautifully situated on the Duraton, a feeder of the Duero. Nava el Carnero, in the southern part of the province, is a well-built town with 3500 inhabitants, who trade in the excellent wine of the neighbourhood, and in fruits, oil, pork, and other articles for the Madrid markets.

The department and town of AVILA have been described before.

The whole province is governed by a Captain-General, and each department by a military governor, subordinate to the Captain-General.

(Miñano, *Diccionario Geografico;* Laborde, *Itinéraire descriptif de l'Espagne;* Ford's *Handbook of Spain;* Macgregor's *Statistics.*)

CASTILLON. [GIRONDE.]

CASTING. [FOUNDING.]

CASTLE, from the Latin *castellum*, a diminutive of *castrum*, an encampment, is a walled inclosure with a tower or towers, strongly constructed and intended as a place of safety. Numerous castles, many of which are in ruins, still remain in various parts of Great Britain, France, Germany, Italy, and in the East. The castles of England consist of those erected by the Romans; of British and Saxon castles erected previous to the Norman conquest, and Norman castles erected after it; and also of the more modern stone and brick castles, erected from about the reign of Edward I. to the time of Henry VII. The Roman castles in this country are numerous, and some of them still in very perfect condition, such as Burgh Castle and Richborough. The Saxons most probably adapted the Roman inclosures to their modes of defence, and it appears that they often raised a mound on one side of the walls, on which they erected a keep or citadel.

In various parts of England, Scotland, Ireland, and Wales, there are numerous encampments or castles, mostly occupying the summits of hills, which have been ascribed to the aboriginal inhabitants. Among the most remarkable are the Herefordshire Beacon, on the Malvern Hills, in Worcestershire; the Caer-Caradock, near Church Stretton, in Shropshire; Moel-Arthur, in Flintshire; Chun Castle, in Cornwall; and Maiden Castle, in Dorsetshire.

Roman Castra were probably sometimes formed on the sites of British works. Richborough Castle, in Kent, perhaps the earliest Roman castle constructed in this island, has been conjectured to have been formed in the reign of Claudius, and completed by Severus. (Batteley's 'Antiq. Rutupinæ,' pp. 6, 14, &c.) It still retains the leading features of one of the most perfect of the stationary castles built by the Romans in England. In the walls are the traces of the four gates; and the layers of brick, or Roman tile, occur with great regularity amongst the rubble.

Saxon castle-building was probably borrowed from the Romanised Britons, who had acquired a taste and knowledge of the arts from the Romans. Thus in Pevensey there are works that have an appearance of Roman character and design, and yet are so much ruder in execution than any other Roman works, that they can only be referred to a time when the knowledge of the Roman arts, though yet fresh in the memory of the inhabitants, might probably be on the decline.

Norman castles, as fortifications, are the strongest. They consisted of mounds and ditches, or moats, with walls on the mounds surmounted with battlements: the walls were also fortified at the top with small projecting towers called bastions. In the walls were entrance gate towers, with bridges either of stone or wood, which were made to draw up and down. The entrances were also guarded with thick doors and portcullises, or gates which dropped down through grooves at the side of the masonry. All apertures, except the gateway, were usually very small. Platforms were made behind the parapets. The gateway was sometimes defended by a barbican, and also flanked by towers, as well as the outer walls. The keep was usually in or near the centre of the castle, and it had sometimes a chapel within it. Rochester Castle, which stands on a small eminence near the bridge over the Medway, is a fine example of a Norman castle.

According to Asser's statement, Alfred built castles of wood and stone. Elfrida, his daughter, built eight castles in three years. (Henry of Huntingdon's 'History,' p. 204.) William of Malmesbury describes a stone castle built by Athelstan at Exeter, A.D. 944. William the Conqueror was a great builder of castles. Forty-nine castles are mentioned in Domesday Book, which notices Arundel as the only one named in the time of the Confessor. It is said that in the 19 years of Stephen's reign 1115 castles were erected. It is almost unnecessary to remark that the build-

ing of such strong edifices, which in the then state of warfare were often impregnable, is a proof of the insecurity to life and property which prevailed. Every feudal chieftain had his stronghold, round which his immediate retainers rallied, for the purpose of mutual defence or to annoy and plunder their neighbours. A very considerable number of old towns of Europe gradually arose around these baronial fortifications; and it is interesting to trace, in the history of many of these communities, the progress by which the town, originally a miserable dependence on the castle, gradually obtained privileges, and charters, and wealth, and increased in strength and importance exactly in proportion as the owner of the fortress lost both, till finally the castle, from being neglected and deserted, was either levelled with the ground and furnished materials for house-building, or remained in ruins, an enduring monument of the slow but certain victory of the once subject townsmen over their lords.

CASTLEBAR. [MAYO.]

CASTOR. [BEAVER.]

CASTOR. Into a cavity situated at the posterior part of the trunk of the Beaver (*Castor Fiber*, Linn.), both in the male and female animal, the urinary organs and anus open, and in this are also lodged two pear-shaped bags, which receive the secretion of certain glands, which is termed castor. The bags are united by a ligament supposed to be their excretory duct. The secretion is at first in a liquid state about the consistence of syrup, but it ultimately becomes solid, losing some of its odour and activity. As met with in commerce it is of two kinds, the Russian, and Canadian or English, of which the Russian is the rarest and most esteemed: it is more carefully managed from the time of its excision, being first dried in smoke, and often wrapped in swine's bladder. The odour is peculiar, very penetrating, and unpleasant; the taste is also peculiar, bitterish, somewhat acrid or aromatic, and enduring. Castorine may be obtained by boiling one part of castor in six of alcohol, and leaving the filtered liquid to cool, when it falls to the bottom. It is very combustible, and is neither acid nor alkaline; it has a copperish taste. It crystallises in long diaphanous fasciculated prisms, is insoluble in cold water and cold alcohol, but dissolves in 100 parts of boiling alcohol, and also in the volatile oils.

If from five to ten grains of castor be received into the stomach, a gentle heat is felt in that organ; a more considerable dose causes a still greater sense of heat, and increased strength and frequency of pulse. That the principles of castor pass into the blood is proved by the secretions acquiring its odour during the employment of it internally. It appears to act specially on the cerebro-spinal and ganglionic systems of nerves, so as to modify their condition. Hence it is used against spasmodic symptoms, and to restore the healthy action of the nervous system when that is disturbed. It is rarely given to excite the digestive organs, the heart, or the lungs, but chiefly to influence the brain, the spinal chord, and the uterus: Its employment is sometimes followed by very profound sleep, which, if the dose be moderate, need not excite alarm. Castor is most useful in hysteria, hypochondrinsis, nervous palpitations of the heart, convulsive hiccup, colic, and similar diseases. It ought not to be employed if any morbid sensibility of the stomach or enlargement of the heart exist.

CASTOR, or α Geminorum, one of the bright stars in the head of the twins from which the constellation gets its name, being the nearer of the two to the polo. [GEMINI.] This is a remarkable double star, that is to say, consists of two stars so close together as to be inseparable to the naked eye, which are nearly equal, and compose the appearance of the third magnitude.

CASTOR OIL. [RICINUS COMMUNIS.]

CASTRAMETATION. [ENCAMPMENT.]

CASTRES, a town in the department of Tarn in France, stands on the Agout, a feeder of the Tarn, in 43° 37′ N. lat., 2° 15′ E. long., at a distance of 46 miles E. from Toulouse, and has a population of 19,250. The south-eastern part of the town, called Villegoudon, is joined to Castres properly so called by two stone bridges. The streets are pretty well built, and have been much improved of late years. The Place-Royale is the principal square. The most important public buildings are—the town-house, formerly the episcopal palace, to which is attached the public library and a beautiful garden; the churches of St. Benoît and Notre-Dame; the two hospitals; the cavalry barracks; the abattoir; and the theatre. Tribunals of first instance and of commerce are held in the town, which has also a chamber of commerce, a college, two theological seminaries, and a Calvinistic church. In both parts of the town there are beautiful shady promenades, called *lices;* and in the neighbourhood there is an immense rocking stone on the top of a hill, at the foot of which is a grotto that was once the retreat of St. Dominic.

Castres is a place of great manufacturing industry; for their care and skill, and the finish given to their productions, its artisans are considered the best in the south of France. It is particularly celebrated for its fine wool-dyed cloths, called *cuirs de laine;* but all other sorts of woollen stuffs are manufactured, as well as linen, soap, leather, glue, and paper. There are also several bleaching, dyeing, and silk-weaving establishments, and iron and copper foundries. The commerce of the town is very considerable.

(*Dictionnaire de la France;* Macgregor's *Statistics.*)

CASTRU'CCIO CASTRACA'NI was born at Lucca about 1283. When he was twenty years of age he visited England, and was admitted into the court of Edward I., and served in the armies of that prince. He afterwards served under Philip le Bel, king of France, and distinguished himself by his valour and abilities. About 1313 he returned to Italy, and assisted in expelling the Guelphs from Lucca, and, after a short reverse of fortune, became master of that republic in 1316. He then attacked Florence, took Pistoja, and completely defeated at Alto Pascio the Florentine army in Sept. 1325. He then joined the other Ghibeline leaders in inviting the Em-

peror Louis of Bavaria into Italy. In 1327 Louis reduced Pisa, and proceeded with Castruccio to Rome, which he entered by force, and was crowned in the Vatican by the bishops of Venice and Aleria in January 1328. While at Rome, he received intelligence that the Florentines had surprised Pistoja, upon which he immediately returned and besieged and took Pistoja, notwithstanding all the efforts of the Florentines to relieve the place. His exertions during the siege brought on an illness of which he died, 3rd September, 1328, at forty-five years of age. Castruccio is acknowledged by Italian historians to have been one of the few Italian chiefs of the middle ages whose ideas soared beyond the narrow circle of municipal ambition, and who entertained enlarged views for consolidating all Italy into one system. Aldo Manuzio the younger has written 'Le Attioni di Castruccio Castracani, Signore di Lucca,' 4to., Rome, 1590, a good work. Tegrimi of Lucca has written the life of Castruccio, Modena, 1496, and Paris, 1546.

CASUARA'CEÆ, a natural order of incomplete exogens, whose branches are, in all cases, long, drooping, green, and wiry, with very small scale-like sheaths in the room of leaves. The timber of some species forms the Beef-Wood of the New South Wales colonists, and is of excellent quality.

CASUISTRY, the name of a science which professes to give rules for the resolution of doubts of conscience. It was greatly cultivated in the 15th and 16th centuries, especially by the Jesuits. The science of casuistry however, though so liable to abuse that it has been termed, not inaptly, the 'art of quibbling with God,' has been cultivated in the Reformed as well as the Papal Church, and for a specimen of its subtleties we may refer to Bishop Taylor's 'Ductor Dubitantium, or Rule of Conscience.' There is a professor of casuistry in the University of Cambridge. For a full account of the casuists, see Mayer's *Bibliotheca of Casuists*, divided into three heads: Lutheran, Calvinist, and Roman.

CAT. [FELIS.]

CAT-FISH. [ANARRHICAS.]

CAT'S TAIL GRASS. [PHLEUM.]

CATABRO'SA, a genus of plants belonging to the natural order of Grasses. The only British species is the *C. aquatica*. It is found in ponds and ditches, and wet sands. (Babington, *Manual of British Botany.*)

CATACOMBS, subterraneous excavations, used as vaults for the burial of the dead. They are found in most parts of the world, but chiefly in those countries which, like Italy, Sicily, and Egypt, offer extensive beds of soft *tufo*, or of some other stone which is easily cut, and which yet is adhesive enough not to fall in.

The catacombs of Rome, the entrance into which is on the Via Appia, at a short distance from the city, are very extensive, and have evidently been used both as burying-places and as places of worship; for Christian altars, inscriptions, and paintings have been found, and in part still exist, in these gloomy crypts; but the long galleries of these catacombs, which twist and turn in a curious manner, are, generally speaking, about eight feet high and five wide; there are mostly three tiers of graves, or cells, running lengthwise, one above another, along the galleries, and in some instances there are two and even three of these dark galleries beneath one another. There seems good ground to believe that the ancient and pagan Romans deposited their dead in them. According to the ciceroni, or guides, these galleries run for 20 miles under ground, and recent explorers have stated their length at six miles.

The catacombs of Naples, which are cut in tufo, under the hill called Capo di Monte, do not differ materially from those of Rome; and their real extent, which is considerable, is liable to the same exaggeration. At Palermo and at Syracuse there are similar recesses, the catacombs of the latter place being very considerable. Catacombs are also found at Malta, and in the Greek islands of the Archipelago. At Milo (one of the Cyclades) we have seen a mountain completely honey-combed with them, a labyrinth of tombs running through it in all directions. From the bassi-rilievi, figures in terra cotta, and other works of art found in them, it was evident that these tombs were of a date far anterior to the Christian epoch. In Egypt these subterraneous excavations occur in all parts of the country where there is rock; but they have neither the extent nor the form of those of Rome or Naples.

The catacombs of Paris could not be called catacombs with any propriety until recent times, when all the churchyards within the city were emptied of their contents, and the skulls and bones sent to the quarries beneath the city.

CATALEPSY, or TRANCE (from the Greek *κατάληψις, catalepsis*, literally 'a seizing'), to which is closely allied *ecstasy*, or the *ecstatic trance*, is a disease of the nervous system, attended with an abolition of sensation and of intellectual operation, and with a peculiar condition of the muscles of voluntary motion, those muscles retaining during the paroxysm precisely the same position they were in at the moment of attack, while the action of the heart and the respiratory functions are but little affected. The malady consists of a great disturbance or an absolute suspension of the functions of the animal life, while the processes of the organic life go on with comparatively little change.

During the paroxysm, which commonly comes on quite suddenly, the patient retains precisely the same posture of the body as at the moment of the attack; even the expression of the countenance which existed at that instant remains unchanged as long as the paroxysm lasts; the eyes, whether open or shut, are perfectly fixed; any position in which any part of the body under the influence of the voluntary muscles may be placed, as the head, the trunk, or the limbs, is retained without the slightest deviation; this fixedness and unchangeableness in the attitude giving to the subject of the malady a striking resemblance to a statue.

After a period of very uncertain duration, sometimes comprehending only a few minutes, and at other times many hours, occasionally, as is stated, even days, consciousness returns generally with the same suddenness as the attack commenced,

the return to consciousness being accompanied with a sighing, and followed by pain or confusion in the head, and a sense of lassitude and fatigue. No memory is retained of any thing that may have passed during the paroxysm, the very same train of ideas returning when consciousness is restored as was present at the instant it ceased.

The treatment of the malady must be different in every different case, according to the particular condition of the system and the nature of the exciting cause. If some derangement of the physical health be the primary cause of the disease, as is almost always the case, the indications of which will commonly be found, if looked for, in the disturbed functions of the brain, the stomach, the liver, the uterus, &c., such remedies must be applied as are calculated to restore these diseased organs to a sound condition; and the treatment must be essentially the same if the intellectual or the moral health, or both, be deranged; for this latter derangement is almost invariably the effect of physical disease, and is wholly dependent upon it.

(Copeland's *Dictionary of Practical Medicine;* Southwood Smith's *Philosophy of Health.*)

CATALOGUE, in Astronomy. This is the name given to a list of stars, with the means of determining their positions annexed, whether latitudes and longitudes, or right ascensions and declinations. Such a catalogue is not only a register of the stars in question, but also gives the means of computing the effects of precession, aberration, and nutation, and thus finding the absolute place of the star in the heavens at any given time. Another species of catalogue is a register only, being a list of objects which are looked at, not for the purposes of geography or navigation, but as connected with purely physical investigations, such as double stars, nebulæ, &c. The places of the objects are only given to such a degree of nearness as will enable the future observer to lay his telescope upon them. We may place in this list all catalogues of comets.

Our whole actual knowledge of astronomy, so far as the position of the heavenly bodies is concerned, is contained in the Catalogues of Stars and the Planetary Tables, the latter of which furnish, not the places of the planets, but the elements by which those places are determined.

A catalogue, such as is now constructed, shows at one given time the places of a number of stars in right ascension and declination, to which are usually annexed various auxiliary quantities to aid, in the reduction of the catalogue to another epoch. These though useful are not necessary parts, since they might be supplied by each person for himself, whereas nothing could replace the actual observation made at or near the epoch in question. A catalogue of stars has a value for all succeeding generations in proportion to its goodness. The comparison of two distant catalogues serves both to determine the precession of the equinoxes and the proper motions of the stars.

A catalogue is the representation of observations, or rather of the mean of the observations of a single person; and it is plain that the catalogues must be considered in a defective state, if they do not agree with the observations of two good observatories, at least as well as these latter agree with each other. To give those who are not acquainted with the state of astronomy some idea of what actually results, we here subjoin the right ascension of some stars as observed and predicted, the last column being the result of the catalogue. The hours and minutes of course are the same; we give only the seconds and fractions of seconds—that is to say, the star is reported to have passed at a certain time by the sidereal clock, of which the hours and minutes are the same in all three, and the seconds and fraction of a second vary as follows

Day. 1835	Star.	Greenwich.	Edinburgh.	Nautical Alm.
Nov. 1	*n* Piscium	30ˢ.05	30ˢ.12	29ˢ.65
——	*p* Piscium	16.00	16.05	16.07
Nov. 27	σ^3 Aquarii	53.03	52.65	53.09
Nov. 28	*s* Piscium	55.68	55.22	55.81
Dec. 2	μ Ceti	5.04	4.86	4.92
——	π Arietis	9.09	8.55	8.18
——	*f* Tauri	49.64	49.61	49.81

In five instances out of seven, the catalogue lies between the results of the observers.

CATALOGUES. [BIBLIOGRAPHY.]

CATALONIA. [CATALUÑA.]

CATALPA, a genus of plants belonging to the natural order *Bignoniaceæ*.

C. syringæfolia is a native of the southern states of North America, along the banks of rivers, where it gains a height of 40 to 50 feet, with a diameter of 2 or 3 feet. In that state its branches become long and naked, and the beautiful appearance of the tree at a younger age is lost. The wood is said to be durable. It is of rare occurrence in the gardens of this country, but when it thrives it forms a singularly beautiful tree, hardly exceeding 30 feet in height, and loaded in May and June with immense quantities of large trumpet-shaped white flowers, variegated with yellow and purple. Many such are seen on the west of London, in the villages of Hammersmith, Chiswick, Turnham Green, &c. It does not bear fruit in this country. *C. longissima* is a tree 30 or 40 feet in height. It contains much tannin in its bark, and is said to be serviceable in humoral asthma.

CATALUÑA (*Catalonia*), a large province with the title of *principality* in the north-east of Spain. On the decline of the western empire, this territory was seized by the Gothi and Alani, from whom it is said to have been called *Goth-Alania*, whence by corruption the modern name. During a part of the 8th century, Cataluña was held by the Moors, till they were driven from it by Charles Martel, and afterwards by Charlemagne. The earls of Barcelona from that time held the sovereignty of Cataluña and the county of Rousillon; but on the death of Ramon Berenguer, whose son Alonso II. was crowned King of Aragon and Earl of Barcelona, Cataluña became annexed to the crown of Aragon, retaining however its own cortes, laws, and usages. By the union of the crowns of Castile and Aragon, the principality became a province of Spain, but held its privileges till the wars of the Succession, in which the province, having

sided with the archduke, Charles of Austria, was formally deprived of its cortes and liberties by his more fortunate opponent Philip IV.

The province is of triangular shape, one side extending for about 200 miles along the Mediterranean, another for 123 miles along the crest of the Pyrenees, and the third for about 137 miles along the frontiers of Aragon and Valencia. The area is stated to be 12,111 square miles. The population in 1834 was 1,125,000. The province is governed by a Captain-General, and is divided into 4 departments named from the chief towns in each: Tarragona, which comprises the south of the province; Lerida, the west; Barcelona, the east and central parts; and Gerona, the north-east.

The Pyrenees throw out numerous offsets, which run in a southern direction, dividing the basins of the different rivers, some of which flow into the Ebro, and others direct into the Mediterranean. The Ebro after running a short way along the western boundary of the province, bends south, passing Tortosa, then east, and enters the sea by three mouths, forming two islands. The navigation of the Ebro below Amposta is interrupted by shoals and rapids. [EBRO.] The Segre rising in the Pyrenees near Andorra, runs south-west past Urgel, receives the Noguera Pallaresa near Balaguer, and farther south the Noguera de Ribagorzana, which forms a great part of the western boundary, and, passing Lerida, enters the Ebro below Mequinenza. The Llobregat rises in the Pyrenees, runs south, receiving the Cardener from the north-west, and enters the sea south of Barcelona. The Ter rising also in the Pyrenees, runs first south-east, then east past Gerona, and falls into the Mediterranean a little south of the Gulf of Rosas. The Fluvia crosses the fertile district of Ampurdan, and enters the Gulf of Rosas near Ampurias. The valleys and plains of Catalonia are fertile; but a large proportion of the country is rocky and naturally barren. The system of irrigation is generally followed. Corn enough for home use is not grown, and there is also a want of cattle; but a good deal of wine is produced. Other articles of produce are oil, hemp, nuts, almonds, fruits, silks, &c. The forests abound with cork-trees, the bark of which is a considerable article of commerce. Catalonia abounds in mineral wealth, coal, copper, lead, zinc, manganese, cobalt, nitre, salt, marble, &c. being found. It is the chief manufacturing province of Spain, the principal fabrics being woollens, cottons, silks, lace, leather, paper, iron, brandy, and liqueurs. The coasts abound with fish. Since the loss of the Spanish American colonies the trade of Catalonia has greatly declined. [BARCELONA.]

The principal town is BARCELONA. Tortosa, on the left bank of the Ebro, which is here navigable, and is crossed by a bridge of boats, is built on a hill; it is surrounded by walls and towers, is a bishop's see, has some fine buildings, several Roman and Moorish remains, and about 16,000 inhabitants. In the neighbourhood of Tortosa are salt pits and quarries of jasper. Lerida, the ancient *Ilerda*, on the Segre, is a strong place, with two castles, and 13,000 inhabitants. Tarragona, the ancient *Tárraco*, on a hill near the sea, about 50 miles S.W. of Barcelona, is the seat of an archbishop, has a fine cathedral, and several Roman remains, among which is an aqueduct, that still carries water to the town. It has some manufactories of silks, carries on a considerable trade by sea, and has 11,000 inhabitants. The chief exports are oil, nuts, wine, brandy, cork, &c. On the coast north-east of Tarragona is Villanueva de Cubellas, a trading and manufacturing town with 9400 inhabitants. Reus, a thriving town west of Tarragona, has manufactories of brandy and liqueurs, and 24,000 inhabitants, who carry on a brisk trade by sea through the small port of Salou, which is 6 miles from the town. Great quantities of nuts are exported to England from this harbour. Manresa, north-west of Barcelona, has manufactures of silks and gunpowder, and 13,000 inhabitants. To the south of Manresa is the mountain called Montserrat, famous for its Benedictine monastery. Cardona, north-west of Manresa, is on the right bank of the Cardener, and at the foot of a rock of pure salt more than 400 feet high, and nearly 3 miles in circumference at the base. The salt is shining, white, and transparent. Farther north-west is Solsona, with considerable manufactories of woollens and hardware. Urgel is an episcopal town north of Solsona, with 2630 inhabitants. Cervera, between Manresa and Lerida, has 5000 inhabitants, and a university, which has been transferred here from Barcelona. East of Cervera is Igualadas a busy manufacturing town with 7731 inhabitants. Mataró, a well-built busy town on the sea-coast, 16 miles N.E. of Barcelona, has manufactories of cottons, silks, lace, and glass, and 13,000 inhabitants. There are ship-building yards at this place. Gerona stands on the right bank of the Ter and near its confluence with the Oña. It is a strong place and has sustained many sieges; is a bishop's see, and has 6000 inhabitants. The territory around is one of the best cultivated in Catalonia: it produces corn, wine, oil, and lemons in abundance. Farther up the Ter is Vich, an episcopal town, with manufactories of woollens and cottons, and 13,000 inhabitants. Coal and copper mines are worked in the neighbourhood, in which also are found amethysts, topazes, and coloured crystals, which are worked by the jewellers of Barcelona. Ripoll is north of Vich, and has manufactories of firelocks, swords, and bayonets, and 3000 inhabitants. Olot, in the valley of the Fluvia, with 14,000 inhabitants, carries on a considerable transit trade. Figueras, a town and fortress near the French frontiers, has 7000 inhabitants. Rosas, the ancient *Rhode*, was formerly an important place, strongly fortified, and carried on a brisk trade by means of its fine harbour in the Gulf of Rosas: it is now a mere fishing village with 2200 inhabitants.

The Catalonian language is a dialect of the Romance or langue d'Oc, mixed up with Castilian words.

(Miñano, *Diccionario Geográfico*; Macgregor's *Statistics*.)

CATA'LYSIS, a term which has been applied by Berzelius to a very obscure class of phenomena, in which a substance, by its mere presence, effects certain changes, either of composition or decom-

position, without itself undergoing any change whatever. The action of yeast in fermentation has been considered an illustration of catalytic action; and the action of diastase in the malting of barley is regarded as another example.

CATAMARAN is a name given both in the East and West Indies to some kinds of rafts which are used in short navigations along the sea-shore. Those used at Madras, where the coast is shallow and shelving and the surf very great, consist of three cocoa-tree logs lashed together, and only large enough to carry one or at most two persons. On the coast of South America the rafts are from 70 to 80 feet long, and from 20 to 25 feet wide.

CATANIA, an Intendenza or province of Sicily, is bounded N. and N.E. by that of Messina, N.W. by that of Palermo, W. by Calatanisetta, S. by the province of Siracusa, and E. by the sea. It is 55 miles long, 35 broad, and has a population of 300,000. The plain of Catania is the largest in Sicily, and produces a great quantity of corn. The hills and valleys near Ætna produce excellent wine. The other chief products are oil, silk, and fruits.

Catania, the ancient *Katanê*, the capital of the Intendenza, stands on the sea-coast, not far from Mount Ætna, in 37° 29′ N. lat., 15° 5′ E. long., and has a population of 52,000. In ancient times Catania suffered greatly from earthquakes and the eruptions of Ætna (Thucyd. iii. 16), as it has done in modern times also. The great earthquake of 1693 destroyed it, but the town has been since rebuilt. The streets are wide and regular, and the buildings are handsome, being mostly built of lava, faced with limestone and decorated with marble. The cathedral, dedicated to Santa Agata, the Benedictine monastery, which is one of the finest monastic buildings in Europe, the Palazzo del Senato, or town-house, are the most remarkable buildings. Among the literary establishments of the city are a university, a lyceum, a public library, a museum, and several collections of antiquities, natural history, medals, sculpture, and paintings. There are several ancient remains in Catania, among which is an amphitheatre. [AMPHITHEATRE.] The harbour is fit for small craft only, by which a considerable export trade is carried on in wine, corn, oil, almonds, figs, soda, manna, silk, cheese, maccaroni, amber, which is found at the æstuary of the river Giarretta, lava, and snow from Ætna. Catania is the seat of a bishop, has tribunals of commerce and appeal, and important silk factories.

Caltagirone, the second town in the province of Catania, is built on two hills joined together by a bridge; it is the seat of a bishop, has several palaces, a royal college, a town-house, Monte di Pietà, and 20,000 inhabitants. Nicosia, built on a hill, has 12,000 inhabitants, who live chiefly by agriculture. Aci Reale stands on a lava rock, which projects into the sea E. of Ætna, and has 15,000 inhabitants. Paternò, the ancient Hybla Major, has 10,000 inhabitants, many convents and churches, and a fruitful territory. Aderno, S.W. of Ætna, has 6000 inhabitants; and San Filippo 700. Among the other towns are Traina, E.N.E. of Nicosia, population 7000, and BRONTE.

CATAPLASMS, or poultices, are substances applied externally to different parts of the body, either to allay pain and repress inflammation, or more frequently to promote inflammation or its consequences, and lessen the pain attending it. For the former purpose they are applied cold, and generally contain a preparation of lead; for the latter they are of different degrees of temperature. When it is intended to hasten the progress of inflammation so as to lead to suppuration, poultices should be of as high a temperature as the part will bear; but of a lower temperature when they are used as mere emollients.

CATAPULTA. [ARTILLERY.]

CATARACT (Gr. *καταῤῥάκτης*, in its most common sense, 'a fall of water over steep rocks,' also 'a door that shuts to,' 'a bolt, barrier, or obstruction,' from *κατα (ρ)-ρηγ-νυμι*, 'to break down or interrupt'), is an opacity of the crystalline lens or its capsule, which obstructs the transmission of light to the retina, and, according to its degree, impairs or destroys the sight.

This disease is divided into *true and spurious* cataract. The latter term is applied to an obstruction which arises from an opaque film of purulent lymph thrown out by inflammation between the uvea and the capsule, often producing adhesion between these parts, and passing like a gauze blind across the pupil. The usual means which control inflammation in other cases may be used in this, and sometimes effect a cure, but no operation is applicable to it; it may arise from injury, and occurs occasionally in gout and rheumatism, and in some forms of secondary syphilis. The ancients appear to have considered all cataracts to be of this nature.

True cataract is of three kinds: *lenticular*, when the opacity is confined to the lens; *capsular*, when the capsule only is affected; and *capsulo-lenticular*, when both structures participate in the disease. The term when used simply is to be understood of the lens itself.

Lenticular Cataract.—An important practical division of this complaint is into the hard and soft kinds. Hard cataract is the most frequent, and is the variety usually met with in advancing age. Though called hard for the purpose of distinction, it may have any consistence, from that which is natural to the part, or less, to the tenacity of wax. In this kind of cataract the lens is almost always diminished in bulk, so that upon examination it may be seen to lie at some distance behind the pupil, the movements of which remain free and unembarrassed.

Soft cataract is frequently single, and prevails in childhood and the middle period of life. In this form of the complaint the lens, instead of shrinking, commonly enlarges, so as to obliterate the posterior chamber and press the iris forward towards the cornea. Its texture is everywhere changed and softened: it may be converted into a turbid fluid, in which case the more opaque particles are sometimes observed to subside during rest; or it may have the consistence of soft cheese.

Capsular or *Membranous Cataract* commonly appears in specks or streaks of a pearly or chalk-white colour, without the blueish tint which pre-

vails in the early stages of both the former kinds, and more frequently affects the anterior layer of the capsule than the posterior.

Capsulo-lenticular Cataract, or that in which both structures are implicated, is much more common. In such cases the lens is usually in the softened state already described. Congenital cataracts are generally of this nature; the opacity, if not *central*, being uniformly diffused, and the consistence never greater, and usually much less, than in the healthy state. It frequently prevails among members of the same family, and has a peculiarity which renders an early performance of the operation of essential importance. This consists in a constant rolling and unsteady motion of the eye-ball, which may become habitual, and preclude the patient from ever acquiring the power of directing the eyes at will towards an object.

The symptoms experienced by a person affected with cataract may readily be imagined. The symptom first perceived is a dim haziness of sight, as if a mist or a thin veil were interposed between the object and the eye. The obscurity is greatest in direct vision; in hard cataract, because the opacity is originally central; in soft, because the direct rays pass through the thickest part of the lens, while those which enter laterally are transmitted nearer to the edge, which is comparatively thin. The sight is better, for the same reason, in weak light, and with the back turned to the window, than in strong light: for the pupil in the latter case is contracted, and permits the passage of the rays only through the middle of the lens. Hence also the advantage derived in all cases from dropping the juice of the belladonna, or deadly nightshade, into the eye, which, with some other sedative vegetable poisons, has the remarkable property of dilating the pupil by some specific action on the iris independently of the retina. It is a curious circumstance that this effect is not impaired by repeated applications.

None of the varieties of true cataract are subject to the influence of any known medicinal remedy, whatever may have been put forward to the contrary to serve interested purposes; nor is it at all likely that any remedy exists with powers capable of acting upon parts so obscurely organised, and so completely out of the course of the circulation. The only way of effectually curing cataract is by operation. This may be effected by extracting the lens, or by displacing it from the axis of vision, or breaking it up and causing its absorption.

CATARRH, or CORY'ZA, that is, catarrh in the strict sense of the term, commonly called *a cold*, consists of inflammation of that portion of the mucous membrane of the air-passages which lines the nostrils.

The symptoms of coryza are a sense of uneasiness, fulness, heat, and stuffing in the nostrils, frequent sneezing, diminished acuteness or total loss of the sense of smell, together with a slight impediment to the respiration, occasioned by the impeded transmission of the air through the nostrils to the lungs, in consequence of the swelling of the membrane, the degree of the swelling being always in proportion to the severity of the inflammation. [BRONCHITIS.] Though the main seat of inflammation in coryza is always in the lining membrane of the nostrils, yet very constantly a sufficient degree of it extends to the frontal sinuses to occasion some uneasiness there, inducing a sense of fulness, heat, weight, and even pain across the forehead. Occasionally, too, the membrane which lines the tube through which the tears pass into the nose becomes so much swollen that the tears cannot enter it, and consequently flow over the cheek; while the external membrane which is reflected over the eye itself participates in the inflammatory affection, and becomes reddened and painful.

The treatment of catarrh is simple, a mild purgative, an equable warm temperature, and warm diluents, such as gruel when in bed to produce perspiration, being generally sufficient. When there is any degree of fever, the treatment must be the same as in bronchitis.

CATA'STOMUS, a genus of fishes belonging to the abdominal Malacopterygii and family Cyprinidæ. The fishes of this genus are peculiar to the rivers of North America, and the species may be distinguished from others of the carp section by their having the lips thick and pendent, and crenated or fringed at the edges; the dorsal fin short, as in the genus *Leuciscus* (which contains the roach, dace, &c.), and opposite to and above the ventral fins. M. Lesueur describes seventeen species of this genus in the 'Journal of the Academy of Natural Sciences' of Philadelphia.

CATCH, in Music, a composition of the humorous kind for three or four voices, in which each voice sings the whole melody; but the different voices take different portions of it at any given time. The words 'catch up' each other so as to produce a ludicrous effect. Webbe and Callcott composed some good catches.

CATCHFLY, a name applied to several plants, which have the property of retaining insects, either by their viscid surface or by some other means. In *Apocynum androsæmifolium*, and some others, they are caught in the hairs that clothe the mouth of the corolla; in *Silene*, by the glutinous substance that exudes from the calyx; in *Dionæa*, by the collapsing of the two sides of the irritable toothed leaves.

CATEAU-CAMBRESIS. [NORD.]

CATECHI'NUM. This peculiar principle is obtained, not merely from Catechu, strictly so called, but also from gambir and some kinds of cinchona bark. The best mode of procuring it is to digest catechu in sulphuric æther, then evaporate the æther, wash the residuum in cold water, repeatedly dissolve it in boiling water, and by renewed evaporation procure it pure. It is persistent at the ordinary temperature of the air; but by long exposure to damp it resolves into a mould-like mass; at a moderate heat it melts into a transparent fluid; by a strong heat it becomes brown. Catechin is valuable as an application to check the flow of blood from leech-bites, scarification of the gums, &c.

CATECHISM. To *catechise* comes from a Greek compound word denoting the reflection of

sound, *κατηχίω*, the reverberation of the voice, and denotes the mode of instruction by question and answer without book. Saint Paul has used the word in his First Epistle to the Corinthians, xiv., 19, 'that by my voice I might teach others,' *κατηχήσω*. *Catechising* then, etymologically and according to the primitive usage, is delivering orally instruction in matters pertaining to religion.

'What, in the infancy of Christianity, was the mode of communicating the elements of Christian truth to persons of all ages, has become in process of time the mode of making such communications to the minds of children only. Children, generally speaking, are now the only persons who need this kind of instruction; and when we use the terms *catechise* and *catechumens*, which last word denotes the persons placed under this mode of religious instruction, we refer them at once to children, and children only. The greater extension of the ability to read has also produced another change. Catechisms originally intended for the use of the instructor have been transferred to the instructed, who have learned in them the answers which beforetime they were wont to have only from the mouth of the teacher. The most celebrated among ourselves of these catechisms is that which is incorporated in the Book of Common Prayer, an intimate acquaintance with which is held to be essential to every person who is a candidate for confirmation. The Assembly of Divines at Westminster, who at a time when Presbyterianism was in the ascendant in England, were called together to devise a new form and order of Christian profession, put forth two catechisms: a larger, containing a system of Christian doctrine, with the evidence on which its several parts were supposed to rest; and a smaller, which was intended for the actual catechetical instruction of the young.

CATECHU. The inspissated extract of the *Acacia catechu* is known by this name; but, as there are several varieties of this substance, it is probable that it is also procured from other species of this genus.

At the season of the year when the sap is most perfectly elaborated, the bark of the *Acacia catechu* is removed, and the tree cut down, the outer white part removed, whilst the inner wood is digested in water, and an extract obtained by the application of heat. It is a powerful astringent, and is very useful in all cases of relaxation of the tissues.

CATEGORY. The word *κατηγορία* (*κατηγορεῖν*, to declare, aver) was used by Aristotle to denote a class of things concerning which some one common assertion may be made, or, in other words, which are susceptible of the same predicate. Aristotle's book of Categories is the first of the six which compose the 'Organon.

Aristotle's frequent mention of the book of Categories, and, above all, as Mr. Taylor in his translation remarks, the obscurity and difficulty of the sentences, and the involved diction, are evidence that Aristotle is the author, though some modern writers have supposed that he is not. In a treatise by the Pythagorean philosopher, Archytas of Tarentum (concerning the Universe, or, as Taylor says, Universal Terms), the arrangement adopted by Aristotle was set forth and discussed. Aristotle and the Peripatetics in general proposed the Categories, merely as comprehensive forms of predication, by which the perplexing variety of human ideas was supposed to be conveniently arranged for the use of the dialectician. All the objects and modes of human thought were thus distributed as species under ten universal terms, to facilitate a comprehensive survey of the whole physical and metaphysical world, known and unknown. The names of the ten Categories, as enumerated by Aristotle ('Cat.,' c. 4, and 'Top.,' l. i. c. 9), are variously expressed in English by different writers. In Dr. Whately's Logic they are rendered as follows: 'substance, quantity, quality, relation, place, time, situation, possession, action, suffering.' The first four Categories are elaborately explained by Aristotle; the definition of the remaining six is soon despatched; but the nature and properties of all are more fully defined incidentally throughout the rest of his works. In the later ages of Latinity these Categories were denominated Prædicaments, the name by which they have since been generally designated in the scholastic works on logic, in which they are usually translated and placed as follows: 'substantia, quantitas, qualitas, relatio, actio, passio, ubi, quando, situs, habitus.'

As to the utility of these ten Categories, it may be remarked that they form an essential part of the artificial system of logic, which was rejected as useless by most of the principal philosophical writers of the last three centuries. The lovers of satire may turn to Gassendi's 'Exercitationes adversus Aristoteleos,' where the ten Categories are unsparingly treated. The remarks of Hobbes in his Logic ('Opera Philosophica,' 4to., 1688) are no less satirical. On the other side, among the defenders of the Categories are Monboddo, Harris, and T. Taylor. Harris, in his elaborate work on the subject ('Philosophical Arrangements,' p. 34), says, 'The doctrine of these Categories is a valuable, a copious, a sublime theory—a theory which prepares us to study every thing with advantage.' In the Categories of Kant ('Kritik der Reinen Vernunft,' 7th ed., 1828), the precise boundaries of human knowledge, *à priori*, are professed to be exhibited. These Categories consist of four primordial classes: 1, quantity; 2, quality; 3, relation; 4, modality; each class containing three Categories: 1, unity, multitude, totality; 2, reality, negation, limitation; 3, substance and accident, cause and effect, action and reaction; 4, possibility, existence, necessity.

The English translation of the 'Organon,' by T. Taylor, 4to., 1812, contains the substance of all the chief Commentaries.

CATENARY (from *catēna*, a chain) is the curve in which a string of perfect flexibility and uniform thickness and density will hang from two points, which we may suppose to be in the same horizontal line, as the nature and properties of the curve will be the same from whatever points it may hang. And all catenaries are similar curves; that is to say, let there be any number of such curves formed by chains of different lengths, then

each of them will be a picture, on a reduced or enlarged scale, of some portion of the longest.

CATENI'PORA, a genus of corals found only in the Palæozoic strata, and in Britain only in Silurian rocks.

CATERPILLAR, a name given to the larva state of butterflies and moths. As this term is therefore of partial application only, whilst that of larva is applied to the second stage of all insects (*i.e.* that which follows the egg), an account of it is given under LARVA.

CATGUT. Several useful articles, manufactured from the intestines of the sheep, are for some unexplained reason denominated catgut. Catgut is generally in the form of cord, string, or twine. The chief purposes to which such cord is applied are musical strings, for harps, violins, and guitars; hatters' bowstrings, for the bowing of fur and wool; clockmakers' cord; and thongs or cords for whips. Gold-beaters' skin is formed from a membrane covering the intestine of the ox.

CATHARINA I. of Russia. [PETER I., THE GREAT.]

CATHARINA II., ALEXIEWNA, born in 1729, was the daughter of the Prince of Anhalt Zerbst. Her name was Sophia Augusta von Anhalt. She married in 1745 her cousin Charles Frederic, Duke of Holstein Gottorp, whom his aunt the Empress Elizabeth of Russia had chosen for her successor. In adopting the Greek communion he took the name of Peter, afterwards Peter III., and his consort that of Catharina Alexiewna. It was an ill-sorted and unhappy match. In consequence of many disagreements with his wife, as soon as Peter came to the throne in 1761, by the death of the Empress Elizabeth, he talked of repudiating Catharine. She anticipated him by a bolder movement. A confederacy was formed; the emperor was arrested, and Catharine was proclaimed sole empress of all the Russias, Peter having signed an act of abdication in July 1762; and six days afterwards he was strangled. Catharine was solemnly crowned at Moscow in 1762. We shall not enter on her private life, but only record the principal acts of her reign, which was a most important one for Russia and for Europe. In 1763, on the death of the weak and indolent Augustus III., king of Poland, she succeeded in procuring the election of one of her favourites, Poniatowski, who was chosen king under the name of Stanislaus Augustus. Discontent and revolt followed, in which the Russian army interfered, and after a state of anarchy, war, and pestilence of many years' duration, the first partition of Poland, concerted between Catharine, Frederic of Prussia, and Joseph II. of Austria, was effected in 1772, and was sanctioned by a subservient Polish diet. Meantime the war with the Turks had proved highly successful to the Russian arms, both by sea and by land. Romanzow defeated the Turks on the Pruth, and the Russian fleet in the Mediterranean defeated and burnt the Turkish fleet at Tschesmé in 1770. By the peace of Kainarji, July, 1774, Azof and Taganrog were ceded to Russia, and Crimea was declared independent of Turkey. In 1785 the Russians took Crimea for themselves. Soon after the Turks commenced a new war against Russia, in which they were joined by Sweden, but they were defeated every where: they lost Ockzakow; Suwarrow took from them Ismail by storm in 1790; and at length by the peace of Yassi, 1792, the frontiers of Russia were extended to the Dniester. Meantime the Poles, taking advantage of the war, abrogated the articles of the diet of 1775, and in 1791 formed a new constitution, against which some of the nobles, Catharine of Russia, and the king of Prussia, protested, and the result was a second partition of Poland in 1793. In 1794 an insurrection broke out at Warsaw, and the gallant Kosciusko placed himself at the head of the Poles. After being successful at first, he was defeated, wounded, and taken prisoner. Warsaw surrendered, and the third and last partition of Poland took place in 1795.

Catharine now promised to send troops to join the coalition against France, when, 17th Nov. 1796, she died of an apoplectic fit, after a reign of 35 years. She was succeeded by her son Paul I.

In the internal administration of her vast empire Catharine effected much good. She was the great regenerator of Russia after Peter I., but with a more enlightened mind and under more favourable circumstances. She began several canals, and founded numerous towns, docks, arsenals, banks, and manufactories, and she encouraged learning. The most remarkable of her own works is her 'Instructions to the Commissioners appointed to frame a new Code of Laws for the Russian Empire,' which were translated into English by M. Tatischeff, London, 4to., 1768.

(Tooke's *History of the Reign of Catharine II.*; Count Segur's *Mémoires.*)

CATHARINA, SANTA. [BRAZIL.]

CATHARI'NE DE' ME'DICI, daughter of Lorenzo de' Medici, son of Piero, grandson of Lorenzo the Magnificent, and nephew of Leo X., was born in 1519. In 1533 she was married to Henri, second son of Francis I. of France. In 1547, on the death of his father and brother, Henri II. ascended the throne, and Catharine became queen of France. Catharine had by her husband five sons, of whom three reigned successively over France—Francis II., Charles IX., and Henri III. During the short reign of Francis II., who succeeded Henri II. in 1559, the chief influence at court was in the hands of the Guises. But when, by the death of this prince in 1560, his brother Charles IX. ascended the throne, Catharine, as regent, became the real ruler of France, and is accountable for all the mismanagement and atrocities of that reign, and, above all, for the massacre of the Protestants in August 1572. Charles IX. died in 1574, and his brother, Henri of Valois, left Poland (where he had been elected king by the Diet), and returned to France, where he was crowned in 1575. Henri III. was a weak and corrupt prince, and his reign was distracted by the intrigues of the queen-mother and of the Guises, by the civil wars between Protestants and Catholics, and by the war between France and Spain. Catharine favoured sometimes one party and sometimes the other, and at last assassination

was resorted to in order to get rid of the Guises. The Duke of Guise and the cardinal his brother were murdered at Blois in December 1588, by order of the king. Catharine herself died at Blois, Jan. 5, 1589, an object of aversion to all parties.

CATHARINE OF ARAGON. [HENRY VIII.]

CATHARINE PARR. [HENRY VIII.]

CATHARINE OF BRAGANZA. [CHARLES II.]

CATHARINE HALL, Cambridge, was founded in 1475, by Robert Woodlark, D.D., chancellor of the University and provost of King's College, who endowed it for a master and three fellows. The visitors, who were sent down to the university by King Edward VI., ordained that there should be six fellows. Eight bye-fellowships have been founded by subsequent benefactors. These are called Skrine fellowships. There are 43 scholarships. Queen Anne annexed a prebend of Norwich to the mastership of this college. The queen is the visitor. There are four livings in the gift of the society.

Catharine Hall is a brick edifice, situated on the west side of Trumpington Street; the buildings occupy three sides of a court, the east side being open to the street. The chapel, hall, &c. are on the north side of the court; the master's lodge on the south side. The college was rebuilt about 1700, and the chapel was consecrated in 1704. In the ante-chapel is the tomb of Dr. John Addenbrooke, fellow of the college, and founder of Addenbrooke's Hospital, who died in 1719.

(Lysons's *Magna Brit.* for Cambridgeshire; *Camb. Guide; Cambr. Univ. Calendar.*)

CATHARTICS are material agents which cause a transient but special irritation of the intestinal canal, followed by alvine dejections. It is not necessary that these substances should be placed in direct or immediate contact with the mucous membrane of the intestines, either at its upper extremity (the mouth) or its lower extremity (the rectum); many of them, when applied to the skin or injected into a vein, will produce the same effect. This irritation is felt at first merely by the mucous membrane, but secondarily it excites the muscular coat so as to increase the peristaltic and vermicular motions of the intestines. The irritation differs in kind and degree. When it affects the membrane merely so far as to occasion a gentle local action, and is followed only by the expulsion of the matter then resting upon or covering it, without augmenting the quantity or altering the nature of this matter, the agents which produce such effect are termed *laxatives*. But if the action be more considerable, and not only the present contents be expelled by their effect, but also the quantity of the secretions of the canal be increased, and their quality perhaps greatly altered, they are termed *purgatives*; and, according to the particular secretion which they most obviously augment, they receive their appropriate name—chologogues, if it be the bile; hydrogogues, if merely the serous fluid. Their effects also frequently extend to the whole system. If their action be very violent, they are designated *drastic* purgatives.

All parts of the intestines do not feel in an equal degree the effect of a cathartic irritant. Some purgatives act more on one part than another; but it may be stated generally that the duodenum, the colon, and the rectum are most under the influence of them. Cathartics also differ essentially in their mode of action, as well as in general in dose, according as they are derived from the mineral or vegetable kingdom. All those from the mineral kingdom, with the exception of calomel, are neutral salts, and are in their secondary effect pre-eminently antiphlogistic, while their dose is considerable. Owing to their solubility, they are frequently given dissolved in water, which influences their action. Those from the vegetable kingdom have nearly all a more or less fœtid odour, which often causes the stomach to revolt, and occasions nausea. Their impression upon the organs of taste is often bitter and very disagreeable. They generally contain a large proportion of bitter extractive matters, resins, and gum-resins. Their dose is often very small, from a quarter or half a grain to very few grains: hence they are often administered in the form of pill, bolus, powder, or electuary, more rarely dissolved in water, sometimes in wine or alcohol, or in the form of extract simple or alcoholic. Several of those from the vegetable kingdom may be applied to the skin, and will produce the usual effect either by rubbing in, as with castor-oil, or when spread on the face of a poultice and applied over the abdomen for a short time. Scarcely any articles from the animal kingdom are used as purgatives, though ox-gall and the roe of certain fishes are deemed laxative. Many fruits, both in their fresh state or preserved, such as prunes, are mildly cathartic. The sudden application of cold to the surface of the body frequently has a useful cathartic action.

By the combination of many purgative substances in the same prescription, their effect is rendered more certain, and at the same time milder. It is also frequently very advantageous to combine purgatives with emetics or with tonics.

CATHARTOCARPUS, a genus of plants belonging to the natural order *Leguminosæ*. The species are trees with large yellow flowers not unlike the common laburnum.

C. Fistulæ, the Purging Cassia, is a tree from 30 to 40 feet high, with yellow flowers and long cylindrical black pods, from 9 inches to 2 feet in length. An extract formed from the pulp of the fruit acts as a mild purgative on the system, and was long in great repute in Europe on that account. It is now however seldom used. (Christison, *Dispensatory;* Don, *Gardener's Dict.*)

CATHEDRAL. Certain churches are called cathedrals or cathedral churches. They are so called in consequence of having a seat of dignity (*cathédra*, a Greek term for a seat) appropriated to a bishop or archbishop.

CATHOLIC CHURCH. [ROMAN CATHOLIC CHURCH.]

CATILI'NA, LU'CIUS SE'RGIUS, of a Roman patrician family, was born about B.C. 109. Catiline was quæstor about B.C. 77, and afterwards served as legatus to Scribonius Curio, proconsul of Macedonia, B.C. 75. He was prætor in B.C. 67.

At the expiration of his prætorship, he obtained the province of Africa. He was an unsuccessful candidate for the consulship in B.C. 66, and in B.C. 65 it is said that he engaged in a plot to murder the consuls Cotta and Torquatus; but the scheme failed owing to the impatience of Catiline. In this same year he was tried for malversation in the government of his province; but he secured an acquittal, as it is stated, by bribing the judices. In B.C. 64 he was a candidate for the consulship against Cicero for the year B.C. 63. During the contest he was tried with many others for the murders which he had committed during the proscription of Sulla, to whose party Catiline belonged, and especially for that of Marius Gratidianus, uncle to Cicero; but he was again acquitted. According to some, this murder, which was committed many years before, in addition to the imputed seduction of Fabia, a vestal and Cicero's sister-in-law, laid the foundation for that animosity with which Cicero afterwards pursued Catiline. Yet Cicero says ('ad Att.,' i. 2) that he had some thoughts of defending him on his trial for malversation.

In the beginning of June, B.C. 64, about a month before the consular election, Catiline held the first meeting of his second conspiracy, eleven men of senatorian rank and four of equestrian being present. Catiline lost his election; and the previous preparations of the consul Cicero prevented the execution of a design which Catiline had formed to kill him and other senators on the day of election. But Catiline still pushed forward his designs with great vigour, though the consular elections now passed off quietly, and Catiline, who was a candidate, was again rejected. Money and arms were collected; and Manlius, one of Sulla's veterans, only waited Catiline's orders to take the field with a large body of his comrades, who, after Sulla's victories, had been settled in different parts of Italy. Information of their proceedings was conveyed to Cicero, and by him communicated to the senate, who, on the 21st October, B.C. 63, issued the decree in the usual form, which gave dictatorial power to the consuls. On the 6th November, another meeting of the conspirators was held, at which arrangements were made for burning Rome and massacring the inhabitants, for the bringing up the Tuscan army under Manlius, and for the murder of Cicero, all which was reported the same evening to Cicero. Catiline still kept up the appearance of innocence, and came down to the senate, which was assembled by Cicero on the 8th November. It was on this occasion that Cicero broke out into the celebrated invective, which is the beginning of the first speech against Catiline. Catiline began to defend himself, but was interrupted by the senate calling out that 'he was an enemy and a traitor to his country.' Catiline abruptly left the senate-house, and set out for the camp of Manlius, with the view of making some decisive movement before the consuls could get an army together to oppose him. The senate immediately declared him and Manlius enemies to the state, and ordered the consuls to raise troops, of which the command was given to C. Antonius, the colleague of Cicero. Q. Marcius Rex and Q. Metellus Creticus were at this time waiting with their armies outside the gates for the honour of a triumph. It being reported that the slaves were arming in Apulia and Capua, Metellus was despatched to Apulia, and Marcius to Fæsulæ, where Manlius was encamped. A remonstrance, addressed to Marcius by Manlius, setting forth their grievances, was answered by a reference to the senate. Up to this time Catiline made little progress, in consequence of his plans being divulged through Fulvia, the mistress of Q. Curius, one of the conspirators, to Cicero, and his designs were consequently thwarted.

A high reward which had been offered by the senate for information respecting the plot had produced no evidence, and it appears certain that a large proportion of the population approved of Catiline's design. But how far they were desirous of change from the hope of plunder, and how far from a dissatisfaction with the government of the senatorian oligarchy, it would be a difficult matter to determine. The senate certainly did not appeal to the people for support. An unsuccessful attempt of the conspirators who remained at Rome to draw into the plot the ambassadors of the Allobroges, at that time in Rome, furnished the consul with evidence against the principal conspirators. Lentulus, Gabinius, Statilius, and Cethegus were arrested; and after a long debate in the senate on the 5th December, in which Cæsar argued against and Cato in favour of the capital punishment of the conspirators, they were condemned to death without a trial, and strangled. Catiline now found himself hemmed in by Metellus Celer on the side of Cisalpine Gaul, and by Antonius, now proconsul, with a superior force among the Appennines. He made a furious attack on the troops of Antonius, which were under the command of M. Pretreius, was defeated, and fell after a desperate resistance, B.C. 62.

The history of Catiline's conspiracy is chiefly transmitted to us by Cicero, and Sallust, who was not a friend to Cicero. The main facts of the conspiracy appear to be well established; and though we cannot sympathise with the Roman nobles, who held all the power of the state in their hands, Rome had no prospect of securing a better state of things if Catiline and his associates had got the power.

CATILLUS, a fossil genus of bivalve shells, allied to *Crenatula* and *Perna*, so named by Cuvier and Brongniart. In the chalk occur species of large size, remarkable for their largely fibrous texture. They have also been called from this circumstance *Inoceramus* by Sowerby, who includes in the genus one species from the lias and others from the galt.

CATKIN, in Botany, is a kind of inflorescence which differs from the spike in nothing but its falling off the stem by an articulation, after its temporary office as the support of the organs of reproduction is accomplished.

CATMANDOO, or KATMANDU. [NEPAUL.]

CATO, *i. e.* the Wise, was a surname given to MARCUS PORCIUS PRISCUS, commonly called *Cato Censorius* or *Cato Major*. He was born in B.C. 234, of a respectable family in Tusculum, and passed his earlier years on a farm in the

Sabine country. Cato's military career commenced in the very year when Hannibal was laying waste the north of Italy after the battle of the Trebia, B.C. 218. He served under Fabius, at the capture of Tarentum, in 209; and two years after he distinguished himself at the battle on the banks of the Metaurus, which was fatal to Hasdrubal, the brother of Hannibal. In private life he maintained the same character for hardiness, industry, and sobriety, which he had earned in the military profession. He attracted the attention of the neighbouring farmers, not more by the simplicity of his habits than by his plain good sense. A young patrician, named L. Valerius Flaccus, persuaded him to remove to Rome, and to offer himself for office. With this friend he afterwards held the highest posts in the state, the consulship and the censorship. Cato was quæstor in 204 B.C., and was appointed to join the army in Sicily, which Scipio was about to carry across into Africa; but the profuse expenditure of the general offended Cato's notions of strict economy. The quæstor returned to Rome, and taking his seat in the senate, to which he was entitled by right of his office, he denounced the conduct of Scipio as fatal to the discipline of the army. Cato, with all his rustic character, was a friend to literature, and it was he who first brought Ennius, the Calabrian poet, to Rome. After holding the plebeian ædileship and the prætorship, in the latter of which he was the governor of Sardinia, he was elected consul in B.C. 195, the year of Terence's birth. Cato had for his province Nearer Spain, where the vigour of his arms and the policy of his counsels added greatly to the Roman influence, and procured him a triumph in the following year.

When Antiochus invaded Greece, Cato served in the Peloponnesus; and in 191, by a bold movement, he dislodged Antiochus from the pass of Thermopylæ, and had the chief glory of the victory gained there by M. Acilius Glabrio. In 184, the year in which Plautus died, he was elected censor. This censorship he made memorable by the strictness with which he executed its important duties. He was now 50 years of age, and he continued for more than 30 years to take a prominent part in public affairs. When Sergius Galba had disgraced his country by the massacre of the Lusitanians after they had surrendered upon terms, and was brought to trial at Rome, Cato subscribed his name as one of the prosecutors, and took an active part in the proceedings. This trial was followed almost immediately by his death, at the age of 85, in B.C. 149.

Cato was a soldier, a politician, an orator, an agriculturist, and an historian. One hundred and fifty of his orations were preserved and admired for many ages. As a writer on agriculture, he is known by his work, entitled 'De Re Rustica,' which, however, is certainly not in the form in which he wrote it. The work consists of very brief directions for the management of a farm, and for economical housekeeping, from the buying of an estate to a charm for curing oxen and a receipt for cheesecakes. Of his historical work, entitled 'Origines' only a few fragments remain.

Cato was twice married. By his first wife he had a son, Marcus, who married a daughter of L. Æmilius Paulus, the sister of the second Scipio Africanus, and died while prætor during his father's lifetime. His second wife was Salonia, by whom he had a son, surnamed from his mother Salonianus. This son was the grandfather of Cato Uticensis. The character of Cato is boldly drawn by Livy (xxxix. 40).

(*Life of Cato*, by Plutarch, and by Nepos.)

CATO, MARCUS PORCIUS, who was surnamed *Uticensis* (of Utica) from the place of his death, was the great grandson of Cato the Censor, and born B.C. 95. He is said to have shown in early youth great firmness. The character of his mind naturally led him to embrace the philosophy of the Stoics, and he became a pupil of Antipater the Stoic. Inflexible decision, severity, and harshness appear to have been the prominent features of his mind; and the great privations and hardships to which he frequently subjected himself, such as abstaining from food, and making long journeys bareheaded and in all weathers, were calculated to strengthen these peculiarities. When his half-brother Cæpio died, he is said to have relaxed the sternness of his spirit, and he who rarely laughed was then seen to weep.

Cato's military career commenced with serving as a volunteer in the war against Spartacus, B.C. 73. He afterwards went as a legionary tribune to Macedonia, where he was a model of sobriety and courage. The designs of Metellus subsequently induced him to become a candidate for the office of tribune of the people. He was successful in his application, and gained by his conduct general esteem. Cato took part with Cicero against Catiline (B.C. 63), and first gave Cicero the title of *Pater Patriæ* (Father of his Fatherland). He vehemently opposed the union of Pompeius, Crassus, and Cæsar, and, though threatened with banishment, fearlessly spoke against Cæsar's agrarian law (B.C. 59). Through the influence of Clodius, and against his will, he was sent to seize Cyprus, which was in the possession of Ptolemæus, brother of Ptolemæus Aulétes, king of Egypt; and, that he might be kept the longer away from Rome, he was ordered to go to Byzantium to settle the affairs of that town. On his return he was elected prætor, in which office he endeavoured as far as possible to put a stop to bribery and corruption. At length, being unable to bring about a reconciliation between Cæsar and Pompeius, he sided with the latter, B.C. 49. He was not in the battle of Pharsalia, B.C. 48, but was stationed at Dyrrachium whence he went over to Africa after the battle. Some dispute arising about the command of the troops in Africa, Cato resigned it to Q. Metellus Scipio, the father-in-law of Pompeius. Scipio was defeated by Cæsar in the battle of Thapsus (B.C. 46), and Cato, who was in Utica, encouraged his countrymen to stand a siege; but the approach of Cæsar alarmed them. Upon this, Cato advised his friends to save themselves by flight, and he even accompanied them to the port. After an evening's meal, and a spirited conversation with some friends, he withdrew to his chamber, and,

after embracing his son with unusual affection, he lay down and read Plato's 'Phædon,' on the immortality of the soul. His son and friends in vain entreated him to desist from his resolution to commit suicide. He stabbed himself below the breast, and died the same night. The inhabitants of Utica exhibited the utmost sorrow at his death, and they solemnised his funeral with great pomp. When Cæsar heard of Cato's death, he is said to have exclaimed, 'Cato, I envy thee thy death, since thou hast envied me the glory of saving thy life!' He died B.C. 46, in the 49th year of his age.

(Plutarch's *Life of Cato;* Sallust, *Catil.*, c. 52-54; Appian, *Civil Wars*, ii. 98; Dion Cassius, xlii.)

CATO, DIONYSIUS. [DIONYSIUS CATO.]

CATOPTRICS. [OPTICS.]

CATS, JACOB, an eminent Dutch poet, was born at Brouwershaven, in Zeeland, November 10th, 1577. His progress in his earlier studies was by no means remarkable. At Leyden he went through a course of jurisprudence, and made some proficiency in Greek. He took the degree of doctor of laws at Orleans, and remained some time in France, in order to perfect himself in the language. On his return home, he practised as advocate in Brouwershaven, but in consequence of ill health was induced to visit England for change of air. From this journey he derived no benefit, except an acquaintance with the language. On his return home his health improved, and he removed to Middelburg, where he married. It was during this part of his life that he produced his 'Emblems,' and 'Spiegel van den Ouden en Nieuwen Tijd.' But the war which broke out in 1621 compelled him to quit Middelburg and go to reside at the Hague. After being pensionary of Dordrecht, in 1625, he was sent on an embassy to England in 1627. About nine years later, he was made pensionary of Holland, which office he retained till 1651, and in the following year was ambassador to Cromwell. This was the close of his public life; and in his rural retreat at Zorgvliet, near the Hague, he composed his 'Buitenleven' (Country Life), and other productions, which constitute the bulk of his works. He died Sept. 12, 1660, shortly before he completed his 83rd year.

CATTARO. [DALMATIA.]

CATTEGAT. [BALTIC.]

CATTI, a people of ancient Germany, who lived between the Rhine and the Visurgis (Weser) as far east as the borders of the Hercynian forest. Tacitus ('German.,' 30) describes them as a fierce, hardy, robust race. Unlike other German nations, whose chief strength lay in their cavalry, the Catti fought chiefly on foot. The Batavi were a tribe of the Catti. Having quarrelled with their neighbours the Hermunduri, the Catti were nearly exterminated. (Tacitus, *Annal.*, xiii. 57.)

CATTLE. In its most extensive sense, the word *cattle* denotes all the larger domestic quadrupeds which are used for draught or food. It is, however, applied restrictively to our domestic varieties of the ox, sometimes with the addition of the term *neat*. The rearing and feeding of cattle is an important branch of agricultural industry; and much of the success of a farmer depends on the judicious management of live stock, without which his land cannot be maintained in a proper state of fertility. Different breeds, moreover, are suited to different purposes; and the feeder and the dairy-farmer, in the choice of their stock, consult their respective interests.

The domestic ox is widely spread. All nations which have it acknowledge its utility, but its origin is not ascertained. It is assuredly not a descendant of the ancient urus, nor can we allow that the zebu or humped races of the East, ancient as they are, are nearer the original type in form than the breeds of Europe. With respect to the Chillingham wild ox, we believe it to be the descendant of a wild race, which once roamed in our forests, and to be specifically identical with the ordinary domestic variety. (See 'Farmer's Library,' Ox, p. 16, et seq.)

Leaving the zebu races of India out of the question, and confining ourselves to Europe, we find the ox, even within the limits of the latter extent of territory, ramifying into many varieties. Poland presents us with a white or grayish white breed, of large stature, with long sharp horns; and a similar race exists in Hungary. Of both these breeds, specimens are preserved in the British Museum. They are better fitted for work than for the dairy; they fatten readily when stalled, and are driven in herds from their native plains, and sold to the graziers in the adjacent districts of Germany. A noble breed of white cattle graze in the solitudes of the Campagna of Italy. In the plains of Jutland, Holstein, and Schleswig, a fine breed of cattle, with short crumpled horns, prevails, capable of much improvement; this stock, allied to the Holderness, fattens quickly, and is much esteemed in the northern parts of Europe. The Friesland, Oldenburg, Danzig, and Tilsit cattle are mostly varieties of this short-horned breed.

Towards the Alps, the cattle have a different character; they are strong and active, and well fitted for a wide and mountain range of pasturage. Of the Swiss cattle, the Freyburg race is perhaps the finest; it occupies the rich pastures between the mountains in the neighbourhood of Greyerz (Gruyères), a place celebrated for its excellent cheese. The cows are middle-horned, and give rich milk; the oxen work well, and when stalled on clover or lucern fatten readily, and yield beef of good quality. In the Jura there is a smaller but very active breed of cattle, calculated for their mountain home, and thriving on scanty food. The oxen are inured to labour, and draw by the horns. The cows are slightly built, and generally of a light red.

Amongst the French breeds, which are numerous, that of Normandy may be particularised, inasmuch as it gives a stamp to the character of the cattle of northern France generally. These cattle are short-horned, with slender limbs, high hips, and thin thighs. The milk of the cows is very rich, and of fair quantity. The Alderney and Jersey breeds are smaller varieties of the Norman; these are much prized in gentlemen's dairies in England.

In the north of Italy, where the Parmesan cheese is manufactured, the cattle resemble those of Switzerland; but in the more southern provinces little pains is taken with the ox: the buffalo is used as a beast of draught and burden.

The British and Irish breeds have been resolved into Long-horns, Middle-horns, and Short-horns. The Long-horns were formerly coarse and heavy beasts; they had, however, good points; the hide was thick and mellow, and the milk, though not abundant, was rich. The great improver of this breed was Mr. Robert Bakewell, of Dishley, who founded what was called the New Leicester or Dishley Stock, a stock peculiarly fitted for the grazier, and remarkable for smallness of bone, rotundity of contour, and a disposition to the laying on of fat where its accumulation was most advantageous. The flesh was fine-grained, and well marbled. The beneficial influence of the Dishley breed extended even to the old Long-horns of Ireland; but this once celebrated breed, after the death of Mr. Bakewell, soon began to deteriorate. Perhaps the stock was bred in and in too much; perhaps his successors have not paid the same attention to the breed, or, in attempting to improve it, have reversed the good that had been done. Be this as it may, the Dishley breed has ceded to the rising dynasty of the improved Short-horns; and, though good Long-horned cattle may occasionally be seen in the midland counties, the fame of the New Leicesters is extinguished.

To the Middle-horned race belong the breeds of Devonshire, Herefordshire, Gloucestershire, Sussex, Wales, and the Scottish Highlands; nor must we except the polled races of Galloway and Angus, which are identical with it in all essential points of contour; they are mere varieties destitute of horns. The Middle-horned stock varies in stature according to climate and pasturage; the horns are of moderate size, fine, well turned, and sharp-pointed; the limbs are clean; the figure is compact, and the expression animated; the oxen readily fatten, and the cows yield rich milk. To this stock the wild cattle of Chillingham evidently belong, and perhaps represent it in its pristine purity. Red, black, dark brown, and dun, are the prevailing colours of the Middle-horns. In hardiness, and in the excellence of the meat they yield, the Middle-horns claim a high rank. Devons, Herefords, and Scots, whether horned or polled, sell well in the London markets.

An old middle-horned race of cattle is spread over various parts of Ireland; of this race, the Kerry breed, noted for its hardiness and general goodness, may be taken as an example. Connaught presents us with an improved stock, exhibiting however the same characters.

With respect to the Short-horned breed, called by many the Dutch breed, and believed to be originally from Holland, it had long been known in the counties of Durham and York, before the time of its great improver, Mr. Collings. The cows were held in reputation as milkers, but the oxen were indifferent feeders, coarse and ill-formed, and produced meat of inferior quality. The change which the breeder's care and pains have effected is very great. In no strain of cattle is this more apparent; for now, while the milking properties are preserved, the tendency to fatten is brought to a high degree; and these qualities are combined with size, a magnificent figure, and the production of beef of the highest excellence. Almost every good Short-horned breed now in existence traces its pedigree to the stock of Mr. C. Collins, and especially to his famous bull Hubback. Mr. Collings founded the celebrated Alloy Stock, from a cross between a short-horned bull, called Bolingbroke, and a beautiful polled red Galloway cow. Of this stock the cow Lady, at the age of fourteen years, sold for 206 guineas; and a daughter of the same cow, called Countess, at nine years old, sold for 400 guineas.

The rise of the Short-horns precipitated the downfal of the Long-horns, but has not interfered with the steady improvement of the Middle-horns, perhaps has contributed to it. At all events, the present leading breeds are the Middle-horns, and the Durham, Yorkshire, and Teeswater improved Short-horns. It is from the latter stocks that the great London dairies are supplied with milch cows. While in milk they yield abundantly, and when *dry may* be fattened off for the market with rapidity; and this is the plan mostly adopted, that is, to sell or fatten the cows when dry, and supply their places with others in milk, to be dried and fattened in turn.

With respect to the breeds to be preferred, every farmer must judge for himself, taking the extent of his land, its quality, its produce, and also his ultimate views into consideration. Different properties are required by the feeder and by the dairy-farmer; and yet, to a certain degree, these different properties may be found united; not indeed manifesting themselves at the same time, but in due succession. Thus the milch cow of the Durham breed, profitable while in milk, will be equally so as a dried beast, fattening for the butcher.

Till recently farmers in England have too much neglected the manure of their stalled cattle, and especially the liquid manure; all this should be collected in tanks: its value cannot be too much impressed upon the mind of the agriculturist; it will repay him for his outlay in making the necessary reservoirs, and deduct greatly from the expense of the food consumed. Without manure there is no corn; and without cattle there is no manure.

For more complete details upon every point connected with neat cattle, we refer to 'The Ox,' in the 'Farmer's Library,' in which the history, treatment, structure, and diseases of this valuable domestic animal are fully entered into.

CATTYWAR, or KATTYWAR, a district which occupies the central part of the peninsula of Gujerat in Hindustan. The surface towards the north is irregular, and in the south is jungly. The soil is variable, but sand prevails on the plains. The more usual kinds of produce are wheat and a few coarser grains. Many horses are reared, the breed being considered among the best in India. The inhabitants, who are not numerous, are known by the name of Catties. The country is divided among numerous tributary chiefs and princes, each

exercising independent power within the limits of his own division. Some of these chiefs are under the direct authority of the British, but the greater number are subject to the Guicowar. All the rights which the British possess in Cattywar have been acquired from the Peishwa and the Guicowar; from the former by conquest, from the latter by mutual arrangement. Those rights have been considered as limited to the collection of tribute and the preservation of peace; in other respects the Cattywar chieftains have been left to the uncontrolled exercise of all the functions of government within their own immediate territories. (*Report of Committee of House of Commons in* 1832 *on the Affairs of India*—Political Division.)

CATULLUS, CAIUS VALE'RIUS, sometimes but erroneously called *Quintus Valerius Catullus*, was born at Verona, B.C. 87, about 17 years before Virgil. His father Valerius was of a respectable family in that city, and was in habits of intimacy with C. Julius Cæsar, who appears, when his affairs led him to visit or pass through Cisalpine Gaul, to have taken up his abode at the house of Valerius. Catullus left home at an early age for Rome, where he plunged into extravagance, mortgaged his estate, and fell into poverty. But his pecuniary misfortunes do not seem to have broken his spirit or abated his good humour. To improve his fortune he, together with his brother, accompanied the prætor Memmius (the same to whom Lucretius dedicated his immortal poem) to Bithynia. But the poet returned as poor as he went, and on his voyage home had the misfortune to lose his brother, to whom he was affectionately attached, and who died on the coast of Troy. After his return from Bithynia he resided mostly at Rome, pursuing his pleasures, though living, as we collect from his writings, in poverty.

His chief or only patron was Manlius Torquatus, on whose marriage with Julia he wrote his 'Carmen Nuptiale.' Notwithstanding his poverty, he lived in intimacy with all the men of talent of his day, among whom were Cicero, Cornelius Nepos, Licinius Calvus the orator, Asinius Pollio, and others.

A considerable part of the writings of Catullus is supposed to be lost. He died, according to some, at the age of 40 or thereabouts. The testimony of all the men of wit and learning of his own and after-times establishes his character as a man of first-rate talents and a true poet. He had a brilliant imagination, and clothed his thoughts in the best language. His style is easy and unaffected; he is always free from conceit or bombast; his lines are full of sweetness and harmony. In his playful moods he has many touches of humour, and is always entertaining and agreeable. When pathetic, his feelings are natural and unrestrained. His longest and most beautiful poem is the 'Epithalamium of Peleus and Thetis.'

The poems of Catullus are said to have been unknown to the moderns till the beginning of the 15th century; and it was only about 1425 that a copy, found in a granary, was first sent to the native city of the author. The following are the most esteemed editions of Catullus:—Vossius, Lond. 1684, and Utr. 1691; Vulpius, Patav. 1737; the 'Variorum' of Grævius, with Tibullus and Propertius, Utr. 1680; Mattaire's in 1715; in the 'Corpus Poetarum,' Lond. 1713; and Doering, Leipzig, 1788 and 1792.

CAUBUL. [AFGHANISTAN; BELOOCHISTAN.]

CAU'CALIS, a genus of plants belonging to the natural order *Umbelliferæ*. The species are herbs with multiplied leaves, and white flowers. They are called by the common name of Bur-Parsley. Two of the species, *C. daucoides* and *C. latifolia*, are found in England in corn-fields on chalky soils. (Babington, *Manual of Brit. Bot.*)

CAU'CASUS, is an extensive mountain system between the Black Sea and the Caspian Sea. The general direction of the range is from W.N.W. to E.S.E. It begins on the shores of the Black Sea, or at a short distance from them south of the small town Anapa, at about 44° 40′ N. lat., and 37° 10′ E. long., and terminates on the shores of the Caspian Sea with the peninsula of Absheron or Abcheran, at 40° 30′ N. lat., and 50° 20′ E. long. The length is about 700 miles; the breadth varies from 60 to 120. The loftiest summit, Elbrooz or Elborus, is 16,800 feet high. West of Elbrooz, the mountains are of comparatively low elevation; but east of that point several summits rise above the snow-line. Many of the offshoots approach close to the Black Sea, and give the coast a bold and rugged character; the approach to the Caspian shores is not so close. The Caucasus is entirely unconnected with any of the great mountain-systems of Europe or Asia, except by a range of hills with the table-land of Armenia.

Among the snow-clad summits, as in the Alps, glaciers are common; and the whole scenery of both mountain-systems has a strong resemblance, except that the Alps have the great advantage of extensive mountain-lakes, in which the Caucasus, so far as is known, is deficient. In mineral riches the Caucasus is probably superior to the Alps. Traces of gold and copper are common; but hitherto these metals have not been worked, except that a small quantity of gold is washed from the sand of some rivers. Iron abounds in many places, and is worked by the natives in a rude way. There are no active volcanoes in the Caucasus, but traces of volcanic agency occur. Earthquakes also happen sometimes. Naphtha or petroleum occurs abundantly, especially in Absheron. [BAKU.] Mud-volcanoes, hot and sulphuric springs, and salt lakes, are also met with.

The intercourse between the countries south and north of the Caucasus is carried on by two roads. The eastern road runs along the shores of the Caspian Sea, by way of Baku, Derbent, and Kizlar; the western road traverses the middle of the Caucasus by way of Tiflis, Passanaur, Kasibeg, and Mozdok. Both routes were known to the ancients, and both are very rugged.

There is probably no country on the globe, of so small an extent, which contains such a number of different nations as the valleys of the Caucasus. There are Ossetes, Abasians, Circassians, Lesghians, Misheghes, Mingrelians, Georgians, and others of minor import. Strabo speaks of seventy different languages having been used in the Cau-

casus in his time. The general position of the Caucasus is described by Herodotus (i. 203), and there is a more particular description in Strabo (book xi.).

(Pallas; Reineggs; Biberstein; Englehardt.)

CAUCUS, a word in use in the United States of North America, where it is applied to public meetings which are held for the purpose of agreeing upon candidates to be proposed for election to offices, or to concert measures for supporting a party, or any measure of a public or local nature; but its use is more generally confined to meetings of a political character. The word is to be found in nearly every American newspaper; and the 'American Cyclopædia' states that it is one of the very few 'Americanisms' which belong entirely to the United States. It is used in Gordon's 'History of the American Revolution,' published in London in 1788. Gordon says, that more than fifty years prior to the time of his writing, 'Samuel Adams's father and twenty others in Boston, one or two from the north end of the town, where all ship business is carried on, used to meet, make a caucus,' &c. It has therefore been supposed that 'caucus' was a corruption of 'caulkers,' the word meeting being understood.

CAUDEBEC. [SEINE INFÉRIEURE.]

CAULERPITES, a group of fossil fucoid plants, of which many species occur, scattered through nearly all the marine formations. In the oolites seven species have been found. The recent genus *Caulerpa* is found in warm southern climates.

CAULIFLOWER, a kind of esculent vegetable consisting of the fleshy, young, undeveloped inflorescence of a variety of *Brassica oleracea*, and is hardly different from brocoli, except in being whiter and less hardy. It is said to have been imported from Cyprus about the middle of the 16th century.

CAUSATION signifies etymologically the *action* of a cause in producing an effect. 'The theory of causation ('Essai sur la Psychologie,' Paris, 1826) supposes three indispensable conditions: 1st, two objects (agent and patient); 2ndly, three changes (that of the agent; reason of the effect—that of the patient; effect of the action—that which the patient produces on the agent; effect of reaction); 3rdly, four distinct moments (that which precedes the action—that in which the action begins—that of the reaction—and that after the reaction).' The subject of causation has always been one on which the most subtle thinkers have exerted their powers of analysis; but, as in every similar research after final principles which cannot by any effort of the understanding be clearly discerned and defined, opinions remain still as conflicting as when the inquiry first began. It appears to be agreed that, though in every instance we actually *perceive* nothing more than that the event, change, or phenomenon B always follows the event, change, or phenomenon A, yet that we naturally *believe* in the existence of some unknown *quality* or *circumstance* belonging to the antecedent A, in virtue of which the consequent B always has been, is, and will be produced. The fact of magnetic attraction is usually adduced in illustration of causative influence; and the inquiry, *why* does the magnet move the iron? suggests the idea of that quality which is denoted by the word *power*; about the nature of which metaphysicians have always disagreed, and their dispute remains still unsettled. It is this attributed *efficiency* in the uniform antecedent of a change which philosophers have considered as forming the *relation of cause and effect*; and their endeavour to express the conception of this hypothetic quality has occasioned the employment of a great variety of terms, as energy, faculty, influence, capacity, ability, virtue, force, possibility, fitness, aptitude, &c. The following references may be useful. Lord Monboddo's 'Ancient Metaphysics,' 4to., vol. i. p. 33-311, vol. ii. p. 212; Hobbes, 'Opera Philos.,' c. ix., 'De Causa et Effectu;' Locke, b. ii. c. 21, 'Of Power,' c. 26; 'Of Cause and Effect.' The far-famed and much-disputed, though not original, opinions of Hume, which, with some slight modification, have been adopted by Dugald Stewart, Dr. Brown, and others, are contained in ss. 4, 5, 6, 7, 8, 11 of his 'Philosophical Essays.' It would be endless to enumerate works in which the subject of causation is discussed. The treatise of M. Maine de Biran on the relation of cause and effect is highly commended by Cousin. Many works on natural theology and free-will contain more or less on the subject—Hobbes, Clarke, Leibnitz, Collins, Hume, Butler, Cudworth, Edwards, Coplestone, and others.

CAUSE, in Natural Philosophy. We have here only to explain the manner in which this word is used, and not to enter into any speculation upon the connection of cause and effect. In common language we say that *A* is the cause of *B*, when we have observed that *B* never appears without *A* having preceded it, or that *A* is always followed by *B*. In natural philosophy the word cause is used in two senses, which may be distinguished into true and hypothetical; and it is found convenient for distinction to Latinise the former term into *vera causa*. By a *vera causa*, or true cause, is meant the word cause used in the ordinary sense, namely, that which is actually concerned in producing the effect: thus the rotation of the earth is a *vera causa* in the production of day and night.

There are two different ways in which the word cause is used in the sense which we distinguish by the word *hypothetical*. The first is when we are able to prove that phenomena take place exactly in the manner and to the extent which would necessarily be if a certain supposition were true. For example, when it is found that the motions of all the planets are precisely such as would take place if the sun attracted them all, and they each other, as implied in the word gravitation, then the attraction which is sufficient to produce the effects in question is assumed as a hypothetical cause. Thus, in the old disputes about the motion of the earth, each side admitted that the other produced an unobjectionable hypothetical cause; and the point in question was, which had the *vera causa*. And the doctrine of immaterialism [BERKELEY] is an attack upon the notion of *matter* as a *vera causa* for the phenomena of the external world, though as a hypo-

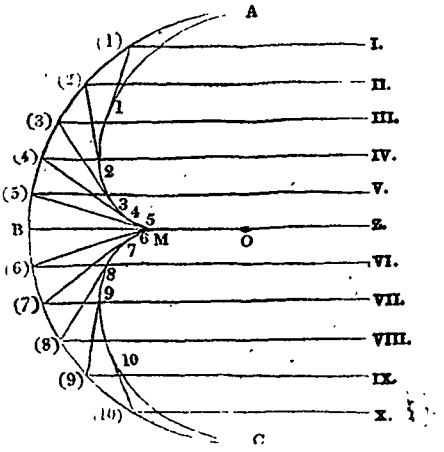
thetical cause it is admitted as an unobjectionable mode of speaking.

Secondly, a phenomenon is cited as the hypothetical cause of another, when the two are always found together, and the nature and quantity of the second are connected by an invariable law with the nature and quantity of the first. Thus, in the phenomena of capillary attraction, because convexity and depression always go together, and also concavity and elevation, the depression is referred to convexity, and the elevation to concavity, by the same sort of language as would be used if the first of each couple were the *vera causa* of the second.' This is a language of convenience, but is apt to be misinterpreted.

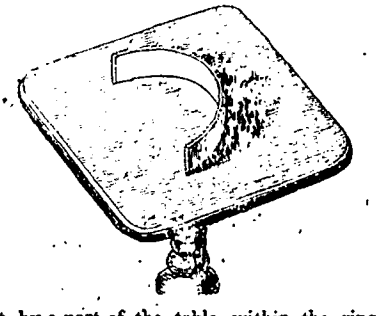
Questions as to whether hypothetical causes are true or not, do not now occupy the attention of philosophers to the extent which was formerly the case. When motions are observed in any system, the forces which would be sufficient to produce them are at once substituted as hypothetical causes. Thus, though it be convenient to trace magnetism and electricity to some common hypothesis, few, we imagine, would attempt to find the *cause* of magnetism in the sense of the *vera causa*. It is otherwise when a hypothetical cause is found not to be sufficient to produce all observed effects. For example, the *undulatory* theory of light has prevailed over the *emanatory*, not because we have less reason to suppose that light is an emanation of particles from the sun and stars than existed a hundred years ago; but because it is found that many lately discovered facts are *not* such as would be true if light were an emanation, but *are* such as would be true if it consisted in undulations excited in an elastic medium.

The great use of hypothetical causes lies in this, that they tell us, as long as they last, what to look for. The cause being assumed, the application of mathematics points out the time or circumstances under which to look for new phenomena, or at old ones in a new method. Thus several phenomena with regard to light, which might have remained long unobserved, have been predicted by computation from the undulatory theory, and subsequently verified. And, in the planetary system, several motions too small to be easily detected except by a person who previously knows in what manner and at what time to watch for them, have been added by theory alone to the list, and verified by observation.

CAUSTIC, in Optics. When a number of rays proceeding from a point are reflected or refracted at or through any number of media, they will not, in most cases, be all thrown to the same point again, but will be dispersed in such a manner as all to touch some curve or surface depending for its form and position upon the position of the luminous point, and the form and position of the reflecting or refracting curve or surface. This curve is called the *caustic* of the surface. We shall now give a case of the most simple kind. A reflecting curve A B C, of a semicircular form, receives rays coming from a point on B O produced, but at so great a distance that they may be considered as parallels. The rays I, II, III, &c., strike the semicircle at (1), (2), (3), &c., and are then reflected in the directions (1)1, (2)2, (3)3, &c. The curve A M C, having a cusp at M, is



constructed in such a manner that any ray whatsoever, moving parallel to Z B, shall, after reflection at the circle, touch or graze this curve, which is therefore called the *caustic by reflection for parallel rays* of the semicircle A M C. And the space A M Z will not be illuminated by any of the *reflected* rays coming from any point in A B, but only by those which come from a part of B C, which, after touching C M, their branch of the caustic, proceed and cut through A M. The consequence is, that the space A M C B will be much more highly illuminated than the exterior space; an effect which may be rendered visible by placing a ring, with a bright anterior surface, upon a table, in the sunlight. It will then become evi-



dent, by a part of the table within the ring, of the form A M C B, becoming brighter than the rest, that the greater portion of the reflected light strikes the table within such a curve.

CAUSTICS. [Escharotics.]

CAUTERETS. [Pyrene'es, Hautes.]

CAUX, a district of the former province of Normandy which now forms the arrondissement of Havre, nearly the whole of those of Dieppe and Yvetot, and a part of that of Neufchâtel, in the department of Seine-Inferieure.

CAVAILLON. [Vaucluse.]

CAVALIER, a work whose rampart is raised several feet above the ramparts of the fortress in

which it is formed. It serves either to defilade those ramparts from the fire of an enemy on a neighbouring height, or to afford a plunging fire into the trenches of the besiegers. It is generally constructed on the terreplein of what is called a full bastion, which it resembles in form; and in this situation it may serve as a retrenchment. The ditches along its faces should be defended by traverses near the shoulders of the work.

Trench cavaliers are works raised by the besiegers on the glacis of a fortress, in order to enable them to direct a plunging fire of musketry into the covered way. They are formed of gabions placed in tiers above each other, and filled with earth.

CAVALIERI, BUONAVENTURA, was born at Milan in 1598, and entered into the order of Jesuits at an early age. He was afterwards professor at Bologna, and died there December 3, 1647. He was a pupil of Galileo, according to the testimony of his friend Riccioli, who professes himself much indebted to his assistance in his studies. But it is said that he did not obtain the professorship at Bologna, in spite of the strong recommendation of Galileo, until his skill in astrology had been duly certified. He was a victim to the gout both in hand and foot, and was confined almost entirely to his bed for twelve years before his death. There is an *éloge* of him by Frisi (quoted by Lacroix, *Biog. Univ.*). He has descended to posterity solely through his method of *indivisibles*, one of the predecessors of the doctrine of fluxions, and which must be considered as one of the first attempts at an organised method of dealing with the difficulties of the solution of which Archimedes had given the first example. Cavalieri considers a line as composed of an infinite number of points, a surface of an infinite number of lines, and so on. This method, absolutely considered, is defective and even erroneous; but the error is of the same kind as that of Leibnitz, who considered a curve as composed of an infinite number of infinitely small chords, and a surface of infinitely small rectangles. The error in both is one which does not affect the result—for this reason, that it consists in using the simplifying effect of a certain supposition too early in the process, by which the logic of the investigation may be injured, but the result is not affected.

CAVALLI'NI, PIE'TRO, a Roman painter of the 14th century, and one of the earliest masters of the modern Roman school, was born at Rome in the letter half of the 13th century, and lived at Rome during the interval that the popes resided at Avignon. The date of his death is uncertain. Cavallini was painter, architect, and worker in mosaic. He assisted Giotto in the mosaic or Navicella of the porch of St. Peter's; and there are still some of his own mosaics in the Basilica of San Paolo and at Santa Maria in Trastevere at Rome. Cavallini painted also several frescoes at Florence, Orvieto, and at Assisi, some of which are still in a tolerable state of preservation. A crucifixion in the church of Assisi is the most remarkable and the best preserved. Vertue has supposed that Cavallini designed the crosses which were erected to Queen Eleanor, and that he was the Petrus Romanus Civis of the inscription on the shrine of Edward the Confessor in Westminster Abbey, and the architect of the shrine, which was finished in 1270.

CAVALLO, TIBERIUS, a distinguished electrician, was born at Naples in 1749, and in the university of that city he completed his education. In 1771 he was sent to London, in order that he might attain a correct knowledge of the mode in which mercantile transactions are conducted in England; but he soon abandoned the pursuits of commerce for those of natural philosophy, and in these he continued to be engaged till his death. He was appointed a member of the Academy of Sciences of Naples in 1779; and in the same year he was elected a fellow of the Royal Society of London. He died December 6, 1809, and was buried in old St. Pancras churchyard, London.

The labours of Cavallo consisted chiefly in the performance of experiments relating to electricity and magnetism, by which he contributed much to the improvement of those branches of philosophy: he also made researches concerning the composition of the atmosphere and the characters of minerals. By means of two pith-balls suspended from one end of a long rod, he determined the nature of the electricity in the atmosphere; also, by means of kites at great elevations, he ascertained the variations which take place in its electrical state, and proved that great quantities of the electric fluid may exist in the atmosphere without producing thunder or lightning.

Cavallo invented a 'condenser of electricity,' which consisted of a tin plate between two parts of a wooden frame covered interiorly with gilt paper: the plate was isolated by being supported on glass pillars; and, one edge being connected with the body containing the electricity, the effect of the condensation was shown, at the opposite edge, by the electrometer. He invented also the instrument called a 'multiplier of electricity;' by which the fluid successively communicated to one brass plate could be transferred to another till a sufficient quantity was accumulated on the latter.

Another of his inventions was a simple micrometer consisting of a thin and narrow slip of mother-of-pearl divided into parts each equal to $\frac{1}{100}$ of an inch; this being fixed in the diaphragm of a telescope, at the focus of the eye-glass, served for measuring small angles.

The principal works of Cavallo are—'A Complete Treatise on Electricity,' 8vo., 1777; 'An Essay on the Theory and Practice of Medical Electricity,' 8vo., 1780; 'A Treatise on the Nature and Properties of Air,' &c. 4to. 1781; and 'Elements of Natural and Experimental Philosophy,' 4 vols. 8vo., 1803: all published in London. He also delivered four Bakerian lectures on thermometrical and magnetical phenomena; which, with several papers on electricity, are printed in the 'Philosophical Transactions.'

CAVALRY (remotely from the Latin *caballus* 'a horse') is that class of troops which serve on horseback. In the British army it consists of the two regiments of Life Guards, the royal regiment of Horse Guards, seven regiments of Dragoon Guards, and sixteen regiments of Light Dragoons,

of which the 7th, 8th, 10th, 11th, and 15th are Hussars, and the 9th, 12th, 16th, and 17th are Lancers. (There is at present no 5th regiment of Light Dragoons.) A complete regiment of cavalry is divided into four squadrons, and each of these into two troops. The full strength of a troop is 80 men; and to each troop there is appointed a captain, a lieutenant, and a cornet. The Life and Horse Guards wear cuirasses.

In 1847 the whole strength of the British army in cavalry amounted to 10,420 rank and file, 626 commissioned, and 1097 non-commissioned officers: in all 12,343 men, and 9306 horses. In the same year the charge of the regimental establishments of the Life and Horse Guards was 86,719*l.*, and the charge for the cavalry of the line was 495,501*l.*; but this includes the charge for the five regiments of Light Dragoons serving in India, amounting to 171,335*l.*, which was defrayed by the East India Company.

Dragoons are a species of light cavalry trained to act either on horseback or on foot as may be required. They appear to have been introduced into the English service before the middle of the 17th century; but the oldest regiment of dragoons in the army is that of the Scotch Greys, which was raised in 1681. The name Dragoon appears to come from the Latin *draconarius*, the appellation given to a standard-bearer, who carried a standard or colour with the figure of a dragon on it.

Hussars are also a species of light cavalry, which originally constituted the national militia of Poland and Hungary. And the Lancers were introduced into the British service in order to correspond to the corps of what were called Polish Lancers in the French army. The long lance carried by this class of troops was supposed to be of use in a charge against infantry.

All these kinds of light cavalry perform the duty of advanced guards and patrols; they escort convoys, and harass the enemy in his retreat; or, in reverses of fortune, they protect the dispersed and defeated infantry.

CAVAN, an inland county of Ireland, in the province of Ulster, is bounded N. by Fermanagh, N.E. by Monaghan, S.E. by Meath, S.W. by Longford, and W. by Leitrim. Its greatest length from N.W. to S.E. is 51 miles; its greatest breadth from N. to S. is 28 miles. The area is 746 square miles, or 477,360 acres, of which, in 1841, 375,473 were arable, 71,918 uncultivated, 7,325 in plantations, 502 in towns, and 22,142 under water. The population in 1841 was 243,158, of whom 234,914 were in the rural district, and 8,244 in the civic district.

The county is in form an irregular oval. It rises into mountains of considerable height at its north-western extremity, but more than two-thirds of its surface, although high and very irregular, present no elevations of any consequence. Slieve Russell, the highest point of the north-western chain, forms, with the remainder of the Ballynageeragh Mountains, the southern boundary of the basin of Loch Erne, the chief feeders of which lake flow from this county. From Loch Gawnagh on the south, where Cavan joins the county of Longford, the river Erne flows northward, through Lough Oughter, to the borders of Fermanagh, where, after having nearly bisected the county of Cavan, it enters Upper Loch Erne at the same point with the Woodford, a considerable stream, which also crosses the county a little farther north from a small lake on the borders of Leitrim. The Erne, between Loch Oughter and Upper Loch Erne, receives the waters of the Annalee, which flows westward from two lakes on the borders of Monaghan. Lough Sheelin and Loch Ramor, or Virginia Water, are also two considerable lakes in this county.

The geological formation of the county is schistose. A patch of granite about seven miles square (or 49 square miles) occurs in the eastern part of the county. The schists occupy the greatest portion of the county. Limestone is found towards the south, where Cavan borders on the central limestone plain of Ireland, but the quantity is small. The whole county is rich in minerals. There are mines of coal and iron; and lead and silver ore, lead and copper ore, coarse manganese, and ochres occur in different parts of the county. Excellent marl, fuller's earth, potter's clay, and brick-clay are abundant throughout the county.

The soil of Cavan is generally cold, spongy, and inclined to rushes, but with proper draining and manuring it can be rendered highly productive. In the district watered by the Erne and its feeders the crops are luxuriant, and the face of the country rich and pleasing. In the mountainous country nothing can be poorer; plough-husbandry is totally unknown, and the crops, which consist of potatoes and a poor sort of black oats, are put in with a narrow-bladed spade called a *loy*. In this part of the county there are few roads, and the slide car is still in general use. The ground in the lowlands is chiefly under tillage, but there is little wheat grown: potatoes, oats, and flax are the principal crops raised. The breed of cattle is poor; but spirited resident proprietors have of late years introduced an improved stock, as well as a better system of farming by the example of green crops and stall feeding. Grazing is not pursued to any extent. The linen trade, formerly carried on extensively in this county, has declined, but there are still many bleach-grounds.

Cavan is divided into eight baronies, which include 36 parishes, &c. It is chiefly in the diocese of Kilmore. The county returns 2 members to parliament.

The following are the chief towns in Cavan, with the population of each in 1841:—

Bailieborough, about 20 miles E.S.E. from Cavan, is a neat and clean town, in a remote and upland district, within three miles of the hill of Longhanleagh, which is 1116 feet high. Population 1203.

Ballyjamesduff, 12 miles S.S.E. from Cavan, is situated in a fertile country, diversified with low and beautifully rounded hills. Population 1071.

Belturbet is situated on the eastern bank of the river Erne, about half-way between Lough Oughter and Lough Erne. Barges convey coals, timber, &c., on the Erne, when the waters are high, from Belleek up to Belturbet. The town contains a church, a Roman Catholic chapel, a Methodist

meeting-house, and several schools. It is irregularly built with few good houses, but is rather a thriving place. Population 1620, or, including the suburb of Kilconny, 2070.

Cavan, the county town, 69 miles N.W. from Dublin, is situated in the centre of a rich tract of land, and watered by one of the streams which fall into Lough Oughter. It is an ancient place, with few good houses. It contains a very handsome county court-house, and the county gaol, a county infirmary, and barracks. The church is a beautiful structure, and there is a commodious Roman Catholic chapel, a Methodist chapel, Presbyterian chapel, union workhouse, and an endowed school in a large building near the town. The town has a considerable retail trade with the surrounding country. Population 3749.

Cootehill is situated at the north-eastern boundary of the county, on the eastern side of the Cootehill River, which flows into the Annalee. It is comparatively a well-built and respectably inhabited town, and has well-attended weekly markets and monthly fairs for the sale of cattle, flax, and yarn. There is a church, a Roman Catholic chapel, two Presbyterian meeting-houses, and places of worship for Methodists, Moravians, and Quakers. Population 2425.

Killeshandra is situated on a gently sloping ridge, surrounded by a chain of lakes, which are supplied by the Croghan stream, and discharge their waters into Lough Oughter, which is a short distance to the east. The town contains a church, a Roman Catholic chapel, and Methodist and Presbyterian meeting-houses. Population 1085.

Kingscourt is situated on the most eastern angle of the county, and consists chiefly of a long straggling street. It has a neat church and spacious Roman Catholic chapel. Population 1614.

Virginia is situated on the northern shore of Lough Ramor, 19 miles S.S.E. from Cavan. Population 965.

History and Antiquities.—In 1610, in consequence of the rebellion of the O'Reillys, the whole of the county was escheated to the crown, and the natives were forced to vacate their former possessions to the extent of upwards of 50,000 acres, of which about 38,000 were distributed among colonists from Scotland, England, and the English pale.

The county is comparatively barren of antiquities. There are indeed remains of raths, tumuli, castles, and religious houses; but none of them are of any extent or historical interest.

(*Statistical Survey of the County of Cavan;* Frazer's *Handbook for Ireland;* Thom's *Irish Almanac; Population Returns.*)

CAVAN, Town. [CAVAN, County.]

CAVE, WILLIAM, was born December 30th, 1637, at Pickwell in Leicestershire, where his father was rector of the parish. He was admitted at St. John's College, Cambridge, and took the degree of B.A. in 1656. In 1679 he was collated by the Archbishop of Canterbury to the rectory of Allhallows the Great, in Thames Street, London. He resigned his rectory of Allhallows in 1689, and in 1691 the vicarage of Islington, which he also held, having on the 19th November, 1690, been admitted to the vicarage of Isleworth in Middlesex. He died at Windsor, on the 4th of August, 1713, and was buried in Islington Church, where a monument was erected to his memory. Among his numerous works the chief are his 'Lives of the Apostles,' 'Lives of the Fathers,' and his 'Primitive Christianity,' which are justly esteemed the best books upon those subjects. (*Biogr. Britannica;* Nelson's *Hist. of Islington*, 4to., London, 1811.)

CAVE, EDWARD, was born at Newton in Warwickshire, Feb. 29, 1691. He is principally known as the projector of the 'Gentleman's Magazine,' and as the friend and early patron of Dr. Samuel Johnson, who wrote an account of his life. He died Jan. 10, 1754.

CA'VEAT. A caveat is a formal notice or caution given, by a party interested, to a court, judge, or public officer, against the performance of certain judicial or ministerial acts. In a more confined sense, a caveat signifies, 1, a caution entered in the Spiritual Court to stop the granting of probates of wills or letters of administration; and, 2, a notice given to the bishop by a party who disputes a particular right of presentation, to prevent the institution of a clerk to a benefice. (Burn's *Ecclesiastical Law*, tit. 'Caveat;' Williams's *Law of Executors*, vol. i.)

CAVENDISH, or CANDISH, THOMAS, was the son of a gentleman of fortune in Suffolk. On succeeding to his inheritance in 1585, he equipped a 'stout bark of 120 tons' on his own account, and accompanied Sir Richard Grenville in his voyage to Virginia and the West Indies. The practice was common in his time, and men of rank and family thought it no disgrace to retrieve their fortunes by plundering on the Spanish main. His first voyage was profitless; and in the hope of better success he sold or mortgaged the remainder of his estates for the purpose of fitting out another expedition, which consisted of three small vessels, one of 120 tons, one of 60, and the third of 40, and the united crews, men and officers, did not exceed 123. The expedition sailed from Plymouth on the 21st of July, 1586, crossed the Atlantic, and navigated the Straits of Magalhaens, of which the coasts, rocks, &c., which were hitherto little known, were in great part surveyed. As soon as he reached the Pacific Ocean (Feb. 24, 1587) he turned northward, and soon came to the scene of action which he had selected as likely to furnish most booty. The men fought and plundered bravely, but not without suffering considerable loss. They burnt Paita, Acapulco, and other places. But the crowning blow of the expedition was the capture of the annual galleon, the Santa Anna, which was loaded with valuable merchandise, and contained 122,000 Spanish dollars in hard cash. This capture effected, Cavendish made his way home through the Indian Archipelago and by the Cape of Good Hope, and reached Plymouth on Sept. 9, 1688. Elizabeth knighted the successful depredator; but in three years Cavendish was a poor man again, and he once more turned his eyes to the New World. An expedition was prepared, but it was unsuccessful; and, worn out by disappointment and vexations of all kinds, the hardy navigator died at sea

on his return towards England in 1593. (Harris, *Collection of Voyages and Travels.*)

CAVENDISH, MARGARET, DUCHESS OF NEWCASTLE, was the youngest daughter of Sir Charles Lucas, and born in Essex towards the close of the reign of James the First. In 1645 she became the second wife of William Cavendish, who had formerly been Earl and was then Marquis of Newcastle, and who had borne arms in the civil war. The exile of the Marchioness and her husband was chiefly spent at Antwerp. On the restoration they returned to England; and in 1664 the Marquis was created Duke of Newcastle. The Duchess died in the end of the year 1673, and her husband, aged 84, in 1676. The Duke of Newcastle was the author of a work on Horsemanship, first printed in French at Antwerp in 1658, and afterwards in English, with alterations, at London in 1667; and also, in the latter part of his life, of some execrably bad comedies. The Duchess was far more prolific: her published works amount to ten printed folio volumes, besides other works that never saw the light. Catalogues of these, and of the Duke's works, will be found in Walpole and in the 'Biographia Britannica.' The best known works of the Duchess are her two volumes of plays, published respectively in 1662 and 1668. These effusions deserve a passing inspection from the student of literary history, as monuments of unredeemed and self-satisfied absurdity.

CAVENDISH, WILLIAM, Duke of Newcastle. [CAVENDISH, MARGARET.]

CAVENDISH, HENRY, was the younger son of Lord Charles Cavendish, and was born Oct. 10, 1731. He received a large fortune from one of his uncles, and devoted himself to mathematics and chemistry, to which his attention was probably turned by his father, who was himself a cultivator of the sciences. He lived a retired life, and never married; his manners seem to have been eccentric, and to strangers very reserved. His library was immense, and he fixed it at a distance from his own residence, that he might not be disturbed by those who came to consult it. He died Feb. 24, 1810, leaving more than a million sterling among different relations. His writings consist of papers in the 'Philosophical Transactions,' from 1766 to 1809. In these papers we find methods and results which have occasioned his being sometimes called the Newton of Chemistry. He was the first to show the real nature of carbonic acid and of hydrogen. He was one of the four chemists (Watt, Priestley, and Lavoisier being the others) who ascertained the true composition of water. He devised a refined experiment for determining the density of the earth, which has been repeated in later times by Mr. Baily. He wrote papers on the Civil Year of the Hindoos, on astronomical instruments, and on electricity. He was the first who carried the mind and methods of a mathematician into the domain of chemistry, by introducing a double process of analysis and synthesis in his labours.

CAVERY, a river in the south of India, which rises among the Western Ghauts, in 12° 20′ N. lat., 4000 feet above the sea. It is not navigable, except for small boats. It flows E.S.E. to Seringapatam, and afterwards forms the eastern boundary of Coimbatore, towards the Carnatic frontier. At Trichinopoly it is divided into two branches, the most northern of which, under the name of Coleroon, falls into the sea at Devicotta. The southern branch retains the name of Cavery, and is afterwards subdivided into several branches, which, by means of canals and embankments, are employed to fertilise the plains of Tanjore. The whole course of the Cavery is about 450 miles.

CAVIAR, an article of food, which consists of the roes of large fish, salted and dried, especially of the sturgeon caught in the Volga. Large quantities are made in the neighbourhood of Astrakhan, as many as 30,000 casks having been exported from that city in a single season. [ASTRAKHAN.]

CAWNPOOR, the capital of the district of Cawnpoor, in Hindustan, is situated on the western bank of the Ganges, in 26° 30′ N. lat. and 80° 25′ E. long. Cawnpoor is a place of great extent, and a large military station, the cantonments being about 6 miles from one extremity to the other. The population is scattered, but, exclusive of the civil and military establishments, of considerable amount. The houses of the European inhabitants are well built and roomy, but the greater part of the houses of the native inhabitants are mean in size and appearance. There are several handsome mosques, and the building of two Christian churches had been sanctioned by the British government when Bishop Heber was there in 1825. (Heber's *Narrative of a Journey to the Upper Provinces of India.*)

CAXTON, WILLIAM, to whom England owes the introduction of printing, was born probably in 1412, in the Weald of Kent. He was put apprentice to one Robert Large, a mercer or merchant of considerable eminence, who was afterwards successively sheriff and lord mayor of London, and who, upon his death in 1441, remembered Caxton in his will by a legacy of 20 marks. Either upon his own account or as agent of some merchant, Caxton travelled in the Low Countries for a short time. In 1464 we find him joined in a commission with one Robert Whitehill, to continue and confirm a treaty of trade and commerce between Edward IV. and Philip, duke of Burgundy, or, if they found it necessary, to make a new one. Seven years afterwards Caxton describes himself as leading a life of ease, when, 'having no great charge or occupation,' he set about finishing the translation of Raoul le Fevre's 'Recueil des Histoires de Troye,' which he had commenced two years before, in 1469. The original was the first book he printed, and this translation the third. In the Low Countries he entered into the service, or at least the household, of Margaret, duchess of Burgundy, who encouraged him to finish his translation of Le Fevre's 'History of Troy.' From the prologues and epilogues of this work we discover that he was now somewhat advanced in years, and that he had learnt to exercise the art of printing, but by what steps he had acquired this knowledge cannot be

discovered; his types, however, show that he acquired it in the Low Countries. The time of his return to his native country is not known with certainty; but the usual supposition has been that he brought the art of printing into England in 1474. In 1477 he had undoubtedly quitted the Low Countries, and had taken up his residence in the vicinity of Westminster Abbey, where and in which year he printed his 'Dictes and Sayings of the Philosophers.' Stowe says he first exercised his business in an old chapel near the entrance of the Abbey; but a very curious placard, a copy of which, in Caxton's largest type, is now at Oxford in the late Mr. Douce's library, shows that he printed in the Almonry. His death seems fixed, by two or three entries in the parish accounts of St. Margaret, Westminster, to the year 1491 or 1492, in which we read 'Item, atte bureyng of William Caxton for iiij. torches vj'. viij'. Item, for the belle at same Bureyng, vj^{d}.'

Caxton, Mr. Warton observes, by translating, or procuring to be translated, a great number of books from the French, greatly contributed to promote the state of literature in England. The known productions of his press amount to 64, and are enumerated with their titles in the 'Penny Cyclopædia.' Lists are also given by Dibdin, Lewis, and others.

The two largest assemblages of the productions from Caxton's press now known are those in the British Museum and in Earl Spencer's library at Althorpe.

CAYCOS, a cluster of six small islands belonging to the group of the BAHAMAS. They are of coral formation, produce cotton and provisions, and contain a population of about 1000. They are called West Caycos, Providenciales, North Caycos, Great Caycos, East Caycos, and East Harbour. The best anchorage is at East Harbour.

CAYENNE. [GUYANA.]

CAYENNE PEPPER. [CAPSICUM.]

CAYLU'S, COUNT, was born at Paris in 1692. After the peace of Rastadt, having previously served in the army, he turned his attention to the fine arts, and visited Italy, Constantinople, Asia Minor, and the ruins of Ephesus and Colophon, for the purpose of studying them. On his return to France, he superintended the publication of the work, 'Pierres gravées du Cabinet du Roi,' in two vols. folio, descriptive of that collection; and of 'Numismata Aurea Imperatorum Romanorum e Cimelio Regis Christianissimi,' which were followed by many works of a similar character, of which the most important are the 'Recueil d'Antiquités Egyptiennes, Etrusques, Grecques, Romaines, et Gauloises,' 7 vols. 4to., of which the last volume was published in 1767, after his death; and the 'Mémoire sur la Peinture à l'Encaustique,' 8vo., 1755, which is a revival of the method of encaustic painting of the ancients. Caylus wrote several novels, which have no very great merit. He died at Paris, in 1765, and left his rich collection of antiquities to the King's Museum.

CAYMANS, three small islands west of Jamaica. Grand Cayman is 24 miles long and 2½ broad. It is low and covered with trees, chiefly cocoa-nut. On the western side of it there is a large village called George's Town. The rest of the island is thinly inhabited. The other two, called Little Cayman and Cayman Brack, are barren and uninhabited.

CEAN-BERMUDEZ, JUAN AUGUSTIN, was born at Gijon in the Asturias, in 1749. He studied architecture and drawing, but not apparently with any great success, and, having a small pension from the government, he was enabled to devote himself entirely to his literary pursuits as the historian of Spanish art. His first publication was the 'Diccionario Historico de los mas ilustres Professores de las Bellas Artes en España,' 6 vols. 8vo., 1800; and his others are: 'Descripcion Artistica de la Catedral de Sevilla,' 1804; 'Descripcion del Hospital del Sangre,' 1804; 'Carta sobre el Estilo, &c. de la Escuela Sevillana, 1806; 'Dialogo sobre el Arte de Pintar,' 1819; and lastly the 'Noticias de los Arquitectos y Arquitectura en España,' 4 vols. 4to., 1829, &c., a work founded upon materials collected by Eugenio Llaguno. He also published a Memoir of his friend Jovellanos. Cean-Bermudez died in 1834, and left several manuscript works, one of which, on the Roman antiquities of Spain, was afterwards edited at the expense of the Royal Spanish Academy of History.

CEANOTHUS, a genus of plants belonging to the natural order *Rhamnaceæ*. The species are natives of North America. *C. Americanus*, Red Root, New Jersey Tea. It is said that the leaves have been sometimes used in New Jersey as a substitute for tea. It dyes wool of a fine strong nankin-cinnamon colour, and is a beautiful shrub when in flower.

There are several other species of this genus, natives of North and South America. They are small neat shrubs, with large red roots, which give them the name of Red Root. They grow very well in this country, and may be planted in any common garden soil, and form proper plants for the front of a shrubbery. They may be propagated by layers or seeds. Those from Mexico and the greenhouse species must be protected from frost during the winter. Cuttings will root in sand under a hand-glass.

(Lindley, *Flora Medica;* Don, *Gardener's Dictionary.*)

CEBES, a Theban philosopher, and a disciple of Socrates, was the writer of three dialogues, one of which was called Πίναξ (Table or Tablet). He is represented by Plato as attending Socrates in his last moments, and is one of the interlocutors in the 'Phædon.' The dialogue called 'The Table' has been frequently edited, and is often one of the first books read by a Greek student. It is a description of an allegorical picture, supposed to be fixed to the walls of a temple of Saturn, and representing the life and trials of mankind. The best edition of 'The Table' is perhaps that by Schweighäuser, Leipzig, 1798, which also contains the 'Manuel' of Epictetus, and his last edition of 1806.

CEBRIONI'TES (Latreille), a family of coleopterous insects of the section *Malacoderma*. The species of this family are frequently found upon

plants in marshy situations, but very little is known of their habits. Their larvæ are supposed to live in the ground. About ten species have been discovered referable to the genus *Cebrio*. Most of them are European, among which we may particularise the *Cebrio gigas*, which is not uncommon in France.

CEBUS. [SAPAJOUS.]

CECIDOMY'IA, a genus of two-winged flies (order *Diptera*) of the family *Tipulidæ*. Mr. Stephens enumerates twenty-six species of this genus. They are always of small size. Many of them deposit their eggs on the young buds of various kinds of plants, where the larvæ when hatched produce galls, in which they subsist and undergo their metamorphosis.

One species, *Cecidomyia salicina*, is common in France, on willows. Another species, *Cecidomyia Tritici* (*Tipula Tritici*, Kirby), commonly called the Wheat-Fly, is notorious for the mischief it occasions to growing wheat: it deposits its eggs by means of a long contractile ovipositor upon the interior valvule of the corolla, just above the stigma. The larvæ feed on the pollen; the consequence of which is, that the ears form no grain. For a detailed history of the Wheat-Fly, by the Rev. Mr. Kirby, see 'Trans. Linn. Soc.,' vol. iv. pp. 224, 230, and vol. v. p. 96.

CECIL, WILLIAM, BARON BURLEIGH, was born at Bourne, in Lincolnshire, Sept. 13, 1520. His father was master of the robes to Henry VIII. He was educated at Grantham, Stamford, and at St. John's College, Cambridge. At twenty-one he entered at Gray's Inn, and applied himself to the study of the law. In Aug. 1541, he married a sister of Sir John Cheke, who died in the second year of their marriage, leaving one son, Thomas, afterwards Earl of Exeter. In the same year he was introduced to Henry VIII., who, conceiving a favourable opinion of him, conferred upon him the reversion of the office of custos brevium in the Common Pleas. Shortly after the accession of Edward VI., Cecil married Mildred, daughter of Sir Anthony Cook, the director of the king's studies, which connection procured him the friendship of the lord protector. In 1547 the lord protector appointed him his master of requests, an office not only of distinction but of great trust. Cecil quickly acquired the confidence of the young king, and in 1548 was appointed secretary of state.

On the fall of the lord protector, Cecil was imprisoned for a short time, but afterwards, in Oct. 1551, restored to his office and knighted. While secretary of state, Cecil effected several important measures, one of which was the abolition of the exclusive privileges of the merchants of the Steelyard. He took no part in Northumberland's designs for altering the succession to the throne on the death of Edward VI., but declared for Mary; though, refusing to change his religion, he held no office during her reign, and, as member for Lincolnshire, even opposed some of the measures of the Catholic party.

Foreseeing that Mary could not long survive, Cecil opened a private correspondence with the Princess Elizabeth, and enabled her to avoid the snares of Mary. He was the first person sworn of the privy council in the new reign, and was forthwith appointed secretary of state. From this time until the close of his life, Cecil directed the affairs of England. In 1571 Cecil was created Baron Burleigh; in 1572 he received the order of the garter; and in the same year succeeded the Marquis of Winchester as lord high treasurer. It is impossible within the limits of this article to notice even the principal measures promoted by this great minister. His vigilance, his unceasing application, and unimpeachable integrity enabled him to overcome the difficulties which surrounded him, and to the end of his career to retain the favour of the queen, and the respect and affection of her subjects. He died Aug. 4, 1598, in the 78th year of his age, having held the station of prime minister of England for upwards of half a century. He had, by his second wife, Robert, who was created Earl of Salisbury, and also two daughters.

CECIL, ROBERT, EARL OF SALISBURY, son of Lord Burleigh, by his second wife Mildred, was born about 1550. He was of a weakly constitution, and deformed in his person. He was educated at St. John's College, Cambridge, and during his father's life occupied several offices of trust in the queen's government, and on his father's death succeeded him as prime minister. He privately corresponded with James I., and, on his accession, was confirmed in his office. In 1603 and the few following years, he was created a baron, viscount, Earl of Salisbury, and a knight of the garter. He was unquestionably the ablest minister of his time, though he exposed himself to considerable odium as the promoter of the disgrace and fall of the Earl of Essex, and afterwards of Sir W. Raleigh; but he was never accused of pecuniary corruption or dishonesty. He died at Marlborough, on his road from Bath, where he had been for the recovery of his health, on May 24, 1612.

CECILIANS, or CÆCILIÆ, the name of a group or family of naked limbless reptiles, placed by Cuvier within the pale of the serpents; but by subsequent zoologists among the amphibia. The eyes are extremely small, and nearly hidden under the skin, and in some species are altogether wanting. The skin is smooth, viscous, and striated with annular folds; delicate scales are arranged in transverse rows in its substance. These reptiles inhabit the warmer portions of America, India, and Africa. See 'Erpetologie Générale,' par MM. Dumeril et Bibron, vol. viii. p. 272. [SIPHONOPS.]

CECROPIA. [URTICACEÆ.]

CEDAR. [ABIES; JUNIPERUS.]

CEDAR-BIRD. [BOMBYCILLA.]

CEDRELA'CEÆ, a natural order of plants, belonging to the syncarpous group of polypetalous exogens. The species are timber trees: the timber is usually compact, scented, and beautifully veined.

Cedrela toona, Bastard Cedar, is a valuable species, a native of the East Indies, where it is called Toon. The bark is a powerful astringent, and is said to be a good substitute for Peruvian

Bark in the cure of periodic diseases, and in the various forms of fever, dysentery, diarrhœa, &c.

An essential oil called Wood Oil is found in *Chloroxylon Swietenia*, a species belonging to the family, which is a native of the East Indies. The wood is of a deep yellow colour, and called Satin Wood, remarkably close-grained, heavy, and durable, and comes nearer to Boxwood than the produce of any other tree. *Flindersia* possesses a volatile oil. *F. Australis* is a native of New Holland, and its wood is said to be not inferior to mahogany. *F. Amboinensis* is a native of the islands of Hitu and Ceram. The spiny part of the fruit is formed into rasps.

CEDRIRET, a peculiar substance obtained from the lighter oil of hard-wood tar: it is a liquid, but may be crystallised into red, slender, inflammable crystals.

CELANDINE. [Chelidonium.]

CELA'NO. [Abruzzo.]

CELASTRA'CEÆ, a natural order of polypetalous exogens, consisting of shrubs and trees principally found in temperate latitudes, and not abounding in either the colder or the hotter parts of the world. *Euonymous* or the Spindle-tree, the wood of which is used for butchers' skewers, is the commonest European form of this order.

CE'LEBES, a large island in the Eastern Seas, lying between 1° 40′ N. lat., and 5° 45′ S. lat., and extending from 119° to 125° E. long. The length of the island from N. to S. is about 500 miles. The area has been estimated at 70,000 square miles, and the entire population at about 3,000,000. Three deep bays on the east and south break up those sides of the island into four large peninsulas. The western side of the island is separated from Borneo by the Strait of Macassar. The centre of the island is a mountainous region, from which as a nucleus the four peninsulas branch out, and terminate in promontories.

The three bays are called Bony Gulf (or sometimes Sewa Bay), Tolo Gulf, and Tomini Gulf. There are three considerable rivers, of which the largest, the Chinrana, rises in the Wadjo country, crosses the kingdom of Bony, and discharges itself by several mouths into the Gulf of Bony. Ships of 300 or 400 tons' burthen can ascend this river for a considerable distance, and the native proas much farther to a fresh-water lake. Besides the three rivers there are numerous small streams.

The island is generally fertile. The principal productions are rice, maize, and cassava. Cotton, coffee, and tobacco are cultivated to a limited extent. There are mines of iron, which yield metal of excellent quality, and some gold is obtained. Very large quantities of turtle are taken on the coast.

The population of Celebes is composed of several distinct races, speaking different languages. The Bugis are the most numerous, and include a large proportion of the tribes in the southern parts of the island. The Macassar language is spoken by several tribes who inhabit the south-western limb. The Mandharese language prevails in the central part of the island and towards the western coast, and the Manados inhabit the north-eastern limb. The centre of the island towards the north is inhabited by Turajas or Hornforas, who are supposed to be the aborigines of Celebes. Of all these people the Bugis are considered to be the first in enterprise and intelligence; they engross nearly all the carrying trade of the Indian Archipelago, the trading of other tribes being almost entirely confined to coasting voyages.

The island of Celebes is divided into several states, of which Count Hogendorp has described thirteen. 1. The districts of Manado and Gorontalo are in the northern part of the island. The first belongs in full sovereignty to the Dutch government, and the second is under the nominal sway of a sultan who is in a state of vassalage to the Dutch. 2. Mandhar is shared among seven chiefs, between whom an intimate alliance is kept up. 3. The territory of the prince of Sidereeng. 4. The kingdom of Tanete, on the west side of the island. 5. The states of Luwu, Wadjo, and Soping, to the north of the gulf of Bony; the first, on the east side of the island, is one of the greatest sovereignties, and occupies nearly a fourth part of the territory of Celebes. 6. The kingdom of Bony is populous but poor. A report, made in 1824 by the Dutch residents, stated that the king of Bony had within his dominions 40,000 men capable of bearing arms, and that the whole population amounted to 200,000. 7. The dominions of the king of Macassar. 8. Tello, in vassalage to the king of Bony. 9. Maros, divided into regencies under the Dutch government. 10. Touratte, divided among three chiefs who are under the protection of the Dutch. 11. Boulicomba and Bonthain, under the Dutch. 12. The Southern Districts, under the Dutch, divided into twelve regencies. 13. The small district in which Fort Rotterdam, the chief seat of the Dutch government, is situated.

The principal establishment of the Dutch in Celebes is on the west coast, near the southern extremity of the island, on the spot where formerly stood the native town of Macassar. The roadstead affords good and safe anchorage. The harbour of Macassar was made a free port from Jan. 1, 1847, by a decree dated Oct. 7, 1846.

In 1811 the Dutch authority in Celebes was transferred by conquest to the English, who, on the return of peace, quitted the island, in which the Dutch again established themselves in 1816.

(Stavorinus's *Voyages;* Crawfurd's *Indian Archipelago;* Count Hogendorp's *Coup-d'œil sur l'Ile de Java, &c.*)

CELERY, or *Apium graveolens*, is a wild umbelliferous plant by no means uncommon in the marshes of England, especially near the sea; in the Isle of Thanet it is abundant.

Of garden celery there are many varieties, the best of which for salad is the Turkish, and, for stewing, the Celeriac, or the turnip-rooted sort. For soups, the seeds may be employed with as much advantage as the stems or leaves.

Celery is raised in beds, from seed sown from the end of March to the beginning of May, and requires a light, rich, well-drained soil. When the plants in the seed-bed are about two or three

inches high, they are pricked out into another bed, where they remain till they are six or seven inches high; they are then transferred to trenches, in which they are placed in a row, and finally left. As they advance in size, they are gradually and carefully earthed up, till at last the whole length of the stem under ground is sometimes as much as four feet. The goodness of celery depends essentially upon its growing rapidly, being kept well drained, and having a solid stalk to its leaves.

CELE'STI, ANDRE'A, a painter of the Venetian School, was born at Venice in 1637, and died there in 1706. Celesti's works are very attractive, especially in colouring, in which he resembles Paul Veronese. He painted landscape, history, sacred and profane, and *genre*; cabinet pictures, gallery pictures, and altar-pieces. Five of his best pictures are in the gallery of Dresden, one of which is the sack of a city by night; it is the largest picture in the collection, being very nearly 23 feet long by 13 high.

CELESTINE I., II., III., IV., and V., Popes of Rome, of whom there is nothing of material interest to be told. [POPES.]

CELESTINES, ORDER OF, a monastic order, instituted about 1254, by Pietro da Morrone, afterwards Pope Celestine V., from whom they took the name of Celestines. It was a reform of the order of St. Bernard. It became a very rich order, both in Italy and France. In 1770, in consequence of an order from Louis XV., the Celestines of France held a general assembly, to consider of some reforms insisted upon by the king. These they refused to adopt, and preferred the secularisation or suppression of their order, which was ultimately effected by Pius VI. in 1776-8. Some years after, Ferdinand IV. of Naples suppressed the Celestine convents in his kingdom.

CELLARIÆA or CELLARIADÆ, a family of zoophytes (the animals of which are contained in cells), forming, according to De Blainville's arrangement, the second of the sub-class *Polypiaria membranacea*.

The genera are very numerous, and some are fossil. As examples we may mention *Lunulites*, fossil, *Electra, Flustra, Pherusa, Cellaria, Canda, Caberea, Acamarchis; Crisia, Gemicellaria, Unicellaria*, &c., &c. These genera, we apprehend, are referable to the class *Bryozoa* (Moss Corals) of Hemprich and Ehrenberg, the Cyclobranchiate Polypes of Dr. A. Farre. See 'Annals' and 'Magazine of Nat. Hist.' for June and July 1841.

Some of these forms, as *Flustra*, so common on our coast, are foliaceous in general appearance, the leaves being thickly covered with minute polypiferous cells. Some resemble branches radiating in a fan-like form, as *Canda*, each branch being studded with cells; some are frondescent, as *Acamarchis*, the cells being disposed on the branches; others are like tufts of moss or of waving grass, or tiny bushes, every branch presenting an elegant arrangement of polype-bearing cups or chalices. The whole is rooted upon some stone or shell, and bends gracefully to the currents of the sea.

CELLA'RIUS, CHRISTOPHER, born at Schmalkalden, in 1638, studied mathematics and the oriental languages at Jena. When thirty years of age, he was made professor of philosophy and oriental languages in the college of Weissenfels; and in 1673 was appointed rector of the college of Weimar. Frederick I., Elector of Brandenburg, and first King of Prussia, having founded a new academy at Halle in Saxony, appointed Cellarius professor of history and rhetoric,—an appointment which he held till 1707, when he died. The work by which he is most generally known is the 'Notitia Orbis Antiqui,' or 'Ancient Geography,' first published at Jena, in a small 12mo., but considerably enlarged in subsequent editions. The best edition is that of Leipzig, 2 vols. 4to., 1731, after the author's death, with additions by Schwarz. This work, though it had a value in its day, is now almost useless. The other works of Cellarius are chiefly on classical subjects.

CELLI'NI, BENVENU TO, was born at Florence in 1500, and died there on Feb. 13, 1570. His life is a romance that will not bear abridgment, and as told by himself is one of the most curious and interesting biographies extant. It not only contains very full information respecting the life and professional pursuits of an extraordinary individual, and describes all ranks of persons with whom he was connected during a long and busy career, but furnishes a lively and no doubt tolerably accurate picture of the state of society during the greater part of the 16th century. Cellini's vanity and self-satisfaction, displayed throughout the work, are excessive and highly ludicrous; and, candid or reckless, he does not disguise the excesses into which an ardent temperament and ungoverned passions too frequently urged him. To the dishonour of those who held the reins of government, and especially in the States of the Church, his narrative shows how easily crime was overlooked when the delinquent had talents (either useful or agreeable to his judges) to plead in his behalf, or courtly interest to protect him from the just consequences of a disregard of the laws. There is a translation into English by W. Roscoe. Cellini also wrote a treatise on various branches of his art.

The works of Benvenuto Cellini may be divided into two classes. The first, for which he was most celebrated, comprises his smaller productions in metal, the embossed decorations of shields, cups, salvers, ornamented sword and dagger hilts, clasps, medals, and coins, in which he showed great skill in composition, and excellence in the details of execution. The second includes his larger works, as a sculptor; and a reference to his bronze group of Perseus, with the head of Medusa, in the Piazza del Gran' Duca, in Florence, will be sufficient to illustrate his merit in the higher walk of his art. He also executed some fine portraits.

CELLULAR or AREOLAR TISSUE, one of the primary substances of the animal organisation, the simplest form of membrane, that which is conceived to constitute the original structure from which all the others are produced. It is dispersed over almost every portion of the body. The following are the microscope characters of this tissue,

as described by Bowman and Todd:—When a fragment is examined, it presents an inextricable interlacement of tortuous and wavy threads, intersecting one another in every possible direction. They are of two kinds. The first are chiefly in the form of bands of very unequal thickness, and inelastic. Numerous streaks are visible in them, not usually parallel with the border, though taking a general longitudinal direction. These streaks, like the bands themselves, have a wavy appearance, but can be rendered straight by being stretched. The streaks seen have more the marks of longitudinal creasing than a true separation into threads; for it is impossible to tear up the band into filaments of determinate size, although it manifests a decided tendency to tear lengthways. The larger of these bands are often as wide as the 500th of an inch; the smaller can only be detected with high powers. These are the *white fibrous element*. The others are long, single, elastic, branched filaments, with a dark, decided border, and disposed to curl when not put on the stretch. They interlace with the others, but appear to have no continuity of substance with them. They are most commonly about the 8000th of an inch in diameter. These form the *yellow fibrous element*.

These two tissues may be most easily discriminated by the addition of a drop of dilute acetic acid, which at once swells up the former and renders it transparent, whilst it produces no change in the latter. It thus brings into view corpuscles of an oval shape, which are probably the nuclei of the cells from which the bands have been originally produced. Oval corpuscles, either altogether isolated or having very delicate prolongations with the adjacent threads, are sometimes noticed. They seem to be either advancing or receding stages of the tissue.

In a chemical point of view the leading difference between the white and yellow tissues is, that the former is acted on by acetic acid in the manner already described, and yields a considerable amount of gelatin in boiling; while the latter resists the action of acetic acid, and yields little or no gelatin.

It is proved, by minute and accurate dissection, that the areolar tissue is continued uninterruptedly all over the body, and hence that it constitutes the common band of union between the different regions into which the body is divided, and the several organs contained in them. At the same time it enters very largely into the composition of all the organic solids, many of which are entirely composed of this substance variously modified and arranged.

In this manner the cellular membrane of the body consists of two portions, one of which fills up the interstices which are left between the various organs, and thus unites them with each other; and the other portion closely surrounds the organs, penetrates into their interior, and contributes largely to their formation. The first, called the common or external cellular tissue, has the general extent and figure of the body, constituting the mould of its individual parts; the second, termed the special or internal cellular tissue, envelopes the individual organs, and enters as a constituent element into their structure.

CELLULAR TISSUE is one of the elementary organs of plants. It may be said to constitute the basis of vegetation, never being absent from any plants, often, as in mosses, forming their entire substance, and always being that among which the woody and vascular tissues penetrate. The pith, the soft parts of the bark, the green web that lies between the veins of the leaves, the flesh of fruit, &c. &c., consist of cellular tissue. When examined with a microscope, it is found to consist of little vesicles of semitransparent matter, adhering with considerable tenacity, and varying in figure from that of a spheroid to a rhomboidal dodecahedron, and thence to prismatical and other forms. [TISSUES, VEGETABLE.]

CELLULARES. [VASCULARES.]

CELOSIA, a genus of amarantaceous plants, comprehending the flowers which gardeners call cockscombs, on account of the crested flattened appearance of their inflorescence.

C. cristata, the common Cockscomb, and *C. coccinea*, are both said to be natives of the East Indies. The former came, however, most probably from Japan or China. Their height varies from 6 inches to 2 feet, and the colours from red to white.

Nothing can be more easy of cultivation than these flowers; and they are capable of being brought to an extraordinary size by good management.

CELSIA, a genus of plants belonging to the natural order *Solanaceæ*. *C. orientalis* and *C. sublanata* are the most remarkable species.

CELSIUS, ANDREW, born 1701, at Upsal, died 1744. Andrew Celsius joined Maupertuis and his associates in the measurement of the Lapland degree, and afterwards built an observatory at Upsal. He was the first who employed the centigrade thermometer. He wrote various works, chiefly astronomical and meteorological.

CELSUS, AURE'LIUS CORNE'LIUS, appears to have lived in the Augustan age; but this point is by no means settled, and some suppose him to have lived under Tiberius, Caligula, Nero, or even Trajan.

Nor has the profession of Celsus been thought to be perfectly ascertained; for it has been conjectured that he was not a practical physician, but an amateur, who wrote upon physic as forming a part of philosophy. The observations of Celsus, however, on the most practical points, exhibit such familiarity with the subject, that it is impossible to suppose they could have proceeded from any but an actual physician; and there are several passages in his work which can hardly be supposed to refer to any thing but his own practice.

Celsus wrote treatises on agriculture, rhetoric, and military affairs, as well as on medicine; but all have been lost except the treatise 'De Medicinâ,' and some fragments of his work on rhetoric, published by Sextus Popma. The work on medicine consists of eight books: the first gives a brief account of the history of medicine, and of the regimen to be observed by persons of various constitutions; the second, of prognosis and diet

the third, of the treatment of general diseases by diet; the fourth, of the treatment of partial diseases; the fifth, of medicines, and diseases to be treated by them; the sixth, of the treatment of local diseases by medicine, the seventh, of surgical operations; the eighth, of the bones, with their diseases, fractures, and dislocations. Celsus merited the praise of an eclectic physician, and followed the sect to which he seems to incline, only so far as they followed nature. In opposition to Hippocrates, but in conformity with Asclepiades, Celsus rejects the doctrine of critical days, which he supposes to be an offshoot of the Pythagorean numbers.

Nor did Celsus agree with Hippocrates about bleeding. He bled in fever when the symptoms were violent, the skin red, and the veins full; in pleurisy; in peripneumony, if the patient was strong, but if not, dry cupping was to be employed; in paralysis; in convulsions; in dyspnœa, when it threatened suffocation; in apoplexy; in cases of unbearable pain; in internal contusions; in spitting or vomiting of blood; and in all acute diseases, when he thought that the patient had too much blood. He also bled in cachexia. These instances show that he bled more frequently than Asclepiades, but not more frequently than modern practitioners, excepting, indeed, in the article of cachexia. Celsus used cupping glasses, both with and without scarification; but it is remarkable that he does not speak of leeches, though they were used by Themison.

The first four books of his work direct the method of employing gestation, friction, baths, fomentations, and the sudorific treatment. As to diet, patients are to abstain from eating and drinking at the beginning of their maladies, but they must afterwards take food in moderate quantities. Among the numerous remedies contained in the fifth and sixth books, but few are to be taken internally; by far the greater number are unguents, plasters, cataplasms, &c. The seventh and eighth books give a very favourable idea of the progress which surgery had made in the Augustan age. The operation of lithotomy, as described by Celsus, has been much praised and very extensively adopted. Among the most remarkable points in this division of his work we may mention the account of cataract, and the operation with the needle for its cure (lib. vii. 7); the twofold treatment of goitre by caustic and extirpation (vii. 13); tapping in dropsy (vii. 15); the restoration of the prepuce in the circumcised (vii. 25); the employment of the catheter (vii. 26); manual delivery in cases where the child is dead (vii. 29); and the treatment of fractures and dislocations, in the last book. Nor will the account given by Celsus of the structure of the human body fail to surprise those who have been told that the ancients were ignorant of anatomy.

The princeps editio of Celsus is that of Nicolaus, Florent., 1478. The best editions are those of Krause, Leipz., 1766; of Targa; of Vallart, Lutet., 1772; the 8vo. edition printed at Leyden in 1746; and the one edited by Dr. Milligan, second edit., Edin., 1831. Celsus has been translated into several modern languages. There is a translation into English, with notes critical and explanatory, by Dr. Grieve, London, 1756, 8vo.

(*Histoire de la Médecine par* Le Clerc; *Dissertatio de Celsi Vita*, prefixed to Dr. Milligan's edition.)

CELSUS, P. JUVENTIUS, was the son of Juventius Celsus, also a jurist. The extracts from Celsus in the 'Digest' are supposed to be from the works of Celsus the son. The second consulship of the son belongs to the thirteenth year of the Emperor Hadrian, A.D. 129. The younger Celsus was the author of a work entitled 'Digesta,' in thirty-nine books, and of other works. The tendency of his juristical opinions was to the maintenance of equity and fair dealing (bonum et aequum). Celsus said truly, that in cases in which the good and the equitable were matters for consideration mischievous mistakes were made under the authority of legal science, 'Dig.' 45, tit. 1, s. 91.

CELSUS. -[ORIGINES.]

CELTÆ, the name of an ancient race, which occupied a great part of central and western Europe. The Celtæ appear to have been divided into two great families, the Gauls (Galli, in Greek Κελται and Γαλάται) who occupied Gallia, and who in their own language called themselves Celtæ; and the Cymri, who are by some considered to be the same as the Cimmerians (Κιμμέριοι), who appear to have migrated westwards from the countries bordering on the Sea of Azof, and to have spread across Germany to the ocean. The latest inquiries into the Celtic language show a clear affinity between it and the languages called Indo-Germanic. The earlier Greek writers had very confused notions about the Celtæ (Herodotus, iv. 49). Livy fixes the immigration of Bellovesus and the Celtæ of Gaul, whom the Romans called Galli, into Italy in the reign of Tarquinius the elder; but Niebuhr is inclined to place it at a much later date. It is evident, however, that there were several immigrations of the Gauls into North Italy, and at different times. The Galli, who occupied the plain N. of the Po, drove away the Etruscans; but they never conquered either the Véneti, who were settled E. of the Athesis (Adige), or the Ligurians, who occupied the country S. of the Po to the Mediterranean and the river Macra. The Boii, a later immigration of Gauls, crossed the Po and occupied the country S. of that river; and the Sénones spread S.E. of the Boii, along the Adriatic coast, as far as Picenum. The Gauls never made a permanent settlement in Italy south of the Apennines. In the first Punic war we find Gaulish troops in the Carthaginian service.

In very remote times the Celtæ of Gaul crossed the Pyrenees, and conquered part of Spain, where their descendants, becoming mixed with the Iberians, formed the nation of the CELTIBERI. Some colonies of Celtæ penetrated to the south-west parts of Spain, and into the present kingdom of Portugal. Some of the Gauls are likewise said to have crossed the sea into Britain. The Belgæ, apparently a Teutonic nation, occupied the north part of Gaul and the south part of Britain, and drove the Gauls farther inland.

About 280 B.C. a vast multitude of Celtæ or

Gauls invaded Macedonia and Greece in two bodies. Ptolemæus Cerunus, king of Macedonia, having attempted to oppose one of them, was defeated and killed. They made an immense booty, and retraced their course homewards. The other host of Gauls, under Brennus, entered Macedonia the following year, 279 B.C., and then advanced through Thessalia, and southwards as far as Delphi, with the intention of plundering the wealth of that rich sanctuary. The Gauls were however put to flight, partly by the people of Delphi, and partly by an earthquake, which took place during the attack, and which was followed by a fearful storm (B.C. 278). [BRENNUS.] The Gauls lost vast numbers in the repulse, and still more in their retreat northward. Another incursion into Macedonia was made soon after by another host of Gauls, who were met by Antigonus Gonatas, and totally routed. The remnants of these expeditions withdrew into Thrace, and at last, at the invitation of Nicomédes I., king of Bithynia, who was then at war with his brother Zybœthes, they passed over into Asia to help him. They settled in the interior of Asia Minor to the S.E. of Bithynia, and occupied a great tract of country which from them was called Galatia and Gallo-Græcia. Ancyra (Angora) was one of their principal towns. The Galatæ are frequently mentioned in subsequent history as mercenaries in the armies of the kings of Bithynia and of Pontus, and also in those of the later kings of Macedonia and of Syria. They had their own kings or chiefs, some of whom are mentioned in history. Cicero pleaded before Cæsar for Deiotarus, a Galatian king. Galatia at last became a province of the Roman empire.

The power of the Gauls in Europe was on the decline before Cæsar's conquest of their country. They were pressed on one side by the Belgæ and the Germans, and on the other by the Iberians, who had settled in Aquitania. The Gauls of Italy had been all subjugated by Rome. The Romans had also occupied the Province of Narbo, which originally belonged to the Celtic Gauls. The government of the Gauls was aristocratic; the nobles formed the senate or supreme council; the common people seem to have had no political power. Their kings or chiefs appear to have been elective, and to have held their office only for a year or two, unless re-elected. The Druids formed a powerful hierarchy. [BRITANNIA.] The Celtæ of Gaul had attained a considerable degree of civilisation when Cæsar entered their country. Some seem to have been acquainted with the Greek language by means of the colony of Massilia (Marseille), and the Greek alphabet was in use. It has been disputed whether the Basque language is a dialect of the old Celtic. W. von Humboldt ('Prüfung der Untersuchungen über die Urbewohner Hispaniens vermittelst der Vaskischer Sprache,' Berlin, 1821) seems to be of opinion that the Basque language is of Iberian and not Celtic origin. The remains of the old Celtic language must therefore be sought in the Gaelic, and in the Erse or Irish; and in the Welsh and its cognate dialect, the Breton.

CELTIBE'RI, a people of ancient Spain. [CELTÆ.] The Celtiberi extended from the right or S.W. bank of the Ibérus (Ebro), towards the interior of Spain. They occupied the highlands about the sources of the Duero and the Tagus, and both sides of the great central ridge which divides the waters which flow east towards the Mediterranean from those which flow west into the Duero and the Tagus. The Celtiberi are spoken of by the Greek and Roman writers sometimes as a single people, sometimes as a confederation of various nations. The Celtiberi were a brave people, and they proved formidable both to the Carthaginians and the Romans. After having submitted to Rome in the second Punic War, they repeatedly resumed the contest. After the destruction of Numantia by Scipio Æmilianus, B.C. 133, they were finally subdued. Their country became part of the Roman Provincia Tarraconensis. (Appian, *De Rebus Hispan.*; Livy, &c.)

CE'LYPHUS, a genus of dipterous insects of the family *Lauxanidæ* (Macquart), remarkable for the development of the scutellum, which covers the abdomen, and incloses the wings when at rest; hence these dipterous insects have more the appearance of little beetles than two-winged flies. One species, *C. obtectus*, inhabits Java; another, *C. scutatus*, is found in the East Indies.

CEMENT. Various cements are described under GLUE; LUTES; MASTICH; MORTAR; SOLDER. Another cement, used for fixing pieces of glass while being ground for optical purposes, is made of resin, bees' wax, and whiting. Metal chasers often use a cement made of pitch, resin, tallow, and brickdust. A cement for alabaster or spar may be formed of resin, bees' wax, and plaster of Paris. For various purposes in the arts, the following are used as cements:—Shell-lac; melted sulphur; a mixture of lime and white of egg; a mixture of gum arabic, gum ammoniac, and alcohol; gum ammoniac, isinglass, and alcohol; rice paste; sal ammoniac, flowers of sulphur, and iron filings; red lead, white lead, and linseed oil; quicklime and ox-blood.

CEMETERY. [INTERMENT.]

CENSER, a vessel used for burning and wafting incense; from the French *encenser*, to perfume.

CENSORI'NUS, a Latin grammarian, who lived under the emperors Alexander Severus, Maximinus, and Gordianus, the grandson of the elder Gordianus, who was proclaimed sole emperor in A.D. 238. Censorinus is the author of a small work entitled 'De Die Natali.' He treats of the time of the birth of men, and on the influence of the genii and of the stars on human birth; and he also treats of other matters, relating to chronology, mathematics, and cosmography. The style is good for the period, and the work is of some value for ancient chronology. A fragment, 'De Metris,' by Censorinus is still extant. The latest edition of Censorinus is by Otto Jahn, Berlin, 1845.

CENSORS, at Rome, were first created B.C. 442. At first they were exclusively of the patrician order; the first plebeian who was elected was C. Marcius Rutilus. (Liv., vii. 22.)

At first the censorship lasted for five years, but a law was passed abridging its duration to a

year and a half. (Liv., iv. 24.) Augustus performed the functions of the office, but refused the title. Under Tiberius the censorship was abolished. (Tacit. 'Ann.,' ii. 33.)

When one of the censors died, the remaining colleague resigned, and two fresh censors were chosen. Their duties originally were the administration of the public property and revenues, registering the citizens according to their different orders, and keeping the land-tax rolls. The rank of the citizens and the valuation of taxable property were at the disposal of the censors. They could exclude a senator from the senate-house, deprive an eques of his horse and rank, or remove a plebeian from his tribe.

The administration of the public revenues was a part of the business of the censors, and we find them not only establishing tolls and excise duties in subject towns, but actually fixing the price at which salt should be sold in Rome itself. (Nieb., vol. ii. p. 400.) They let to farm the customs, and the contracts for public works. They superintended the roads, and took care of the public books and documents. Cases of marriage and betrothing came under their inspection. (Varro, 'De Ling. Lat.,' vi. 71, ed. Müller.) Their acts were registered in public documents. There were also censors in many of the municipia, and in the provinces. (Cic. 'In Verr.,' ii. 53.)

CENSORSHIP OF THE PRESS, a regulation which has prevailed in most countries of Europe, and still prevails in many, according to which printed books, pamphlets, and newspapers, are examined by persons appointed for the purpose, who are empowered to prevent publication if they see sufficient reason.

There are different modes of censorship:—the universal previous censorship, by which all MSS. must be examined and approved of before they are sent to press; the indirect censorship, which examines works after they have been printed, and, if it finds any thing objectionable, stops their sale and confiscates the edition, and marks out the author or editor for prosecution; the optional censorship, which allows an author to tender his MS. for examination in order to be discharged from all responsibility afterwards; and lastly, by a distinction which has been very commonly made between newspapers or pamphlets and works of a greater bulk, the censorship of the journals, which exists even in countries where larger works are free from this superintendence. All these forms of censorship imply an establishment of censors, examiners, inspectors, or licensers, as they have been variously called, appointed for the purpose,—a provision quite distinct from the laws which define the various offences which a man may be guilty of by publication: these are repressive or penal laws, whilst the censorship, and especially the previous censorship, is essentially a preventive regulation.

The principle of a general censorship of the press, has been maintained by the Church of Rome in all countries where it had power to enforce it. The Reformation greatly modified the censorship and reduced its powers, without however abolishing it; the power passed into other hands. In England the practice seems to have been to appoint licensers for the various branches of learning, but the bishops monopolised the principal part of the licensing power. Their power passed through various steps, till the licensing system was finally abolished in this country in 1694.

CENSUS, at Rome, was a numbering of the Roman people, and a valuation of their property. It was held in the Campus Martius, after the year B.C. 432. Every Roman citizen was obliged, upon oath, to give in a statement of his own name and age, and of the name and age of his wife, children, slaves, and freedmen, if he had any. The punishment for a false return was, that the individual's property should be confiscated, and he himself scourged and sold for a slave. Taxation depended on the results of the census; many kinds of property were excepted, while, on the other hand, some sorts of property were assessed at several times their value. Constant changes were made by successive censors in the valuation of taxable property. It appears from a passage in Livy (vi. 27) that the census also showed the amount of a man's debts and the names of his creditors.

According to the valuation of their property at the census, the citizens were divided into six classes; each class contained a number of centuries, or hundreds. That a century did not always consist of a hundred men is clear, from the fact that the richest centuries were the most numerous, and consequently must individually have contained fewer persons than the centuries of the poor. The first class consisted of those whose property amounted to 100,000 ases, about 322*l.* 18*s.* of English money; the second class consisted of persons worth 75,000 ases; the fortune of the third class amounted to 50,000 ases; that of the fourth to 25,000; that of the fifth to 11,000; and the sixth class included all below the fifth, even those who had no estate whatever. This was the fullest of the six, but was accounted only as one century. Now, as the richer classes contained far more centuries than the poorer, so much so that the first class contained more than all the rest together, and as the votes in the Comitia Centuriata were taken within the centuries individually, and then the voice of the majority of centuries was decisive, it is obvious that the influence of wealth was greatly preponderant in this assembly. Cicero ('De Repub.,' ii. 22.) assigns this as the object aimed at in the institution. The real object of the Comitia Centuriata was (as Niebuhr supposes) to bind the different orders of the state together in one consistent and organised body. In the Comitia Centuriata the people always appeared under arms, and each class had a particular kind of armour assigned to it.

The census was held at first by the kings, afterwards by the consuls, and, from B.C. 442, by two magistrates called Censors (Censores), who were appointed every five years. The census was not held with strict regularity. The usual interval was five years; and the interval was commonly called a lustre (lustrum).

When a person was duly entered on the books of the censors, this was taken as a proof of his citizenship, even if he were a slave, provided he had been registered with his master's consent. (Ulpian, 'Frag.,' tit. i. 8.; 'Gaius,' i. 17.) As the census was held at Rome, citizens who were in the provinces, and wished to be registered, were obliged to repair there on that occasion (Cicero, 'Ad Att.,' i. 18, &c.); but this was sometimes evaded. The census, accompanied with the ceremony of the lustrum, seems to have fallen into disuse after the time of Vespasian; but the numbering of the population, and the registration of property, continued under the empire.

The nature of the Roman census may be collected from various particulars. One object was to ascertain the number of men capable of bearing arms; and another, to ascertain the amount of each person's property, and the various heads of which it consisted. Cicero's treatise on Laws, though it contains a picture of an ideal republic, appears in one passage (iii. 3, 4) to describe what the Roman census was as it existed in his time. He says—'Let the censors take a census of the ages of the people, the children, the slaves, the property; let them look after the temples of the city, the roads, waters, treasury, the taxes; let them distribute into tribes the parts of which the people consist; then let them distribute the population according to property, ages, classes; let them register the children of the cavalry and the infantry; let them forbid celibacy; let them regulate the morals of the people; let them leave no infamous man in the senate; let there be two censors; let them hold their office for five years; and let the censorial authority be always continued. Let the censors faithfully guard the law; and let private persons bring to them their *acta*' (probably their vouchers or evidences). Thus the Romans must have had an immense mass of statistical documents, collected every five years, from which the population and the wealth of the community at each quinquennial period could be accurately known. Florus (i. 6) observes, that 'by the great wisdom of King Servius the state was so ordered that all the differences of property, rank, age, occupations, and professions were registered, and thus a large state was administered with the same exactness as the smallest family.'

In addition to this we have from the Codes of Theodosius and Justinian various particulars as to the census under the empire, and particularly from a valuable fragment of Ulpian, entitled 'De Censibus.' ('Dig.' 50, tit. 15, s. 2, 3, 4.) These authorities have preserved even the form of the registration under the Roman census. These registers showed the number, class, age, and property of all free persons, and also indicated the heads of families, mothers, sons, and daughters; they also comprised the slaves, male and female, with their occupations and the produce of their labour. They also contained all the lands, and indicated the mode in which they were cultivated; whether as vineyards, olive-yards, corn-land, pastures, forest, and so forth. They showed the number of acres (jugera) of vines, olives, and other trees. In fact, the Roman census under the empire was a complete register of the population and wealth of all the countries included within the limits of the Cæsars' dominions. These remarks are from Dureau de la Malle, 'Economie Politique des Romains,' who has given at the end of one of his volumes the form of the registration tables.

CENSUS. Before the first enumeration of the people of this country, in 1801, the number of the population was a fruitful topic with party writers. By some it was contended that England was far less populous than it had been formerly. It is now known that the population of England increased upwards of two millions and a quarter between 1750 and the end of the century; but it was not until a census was actually taken that an end was put to the disputes as to the amount of the population.

Having once obtained an enumeration of the people, it has been possible to apply the facts to antecedent periods, in order to form an approximative estimate of the amount of population. This task was undertaken by the late Mr. Rickman, who, in 1836, addressed a circular letter to the clergy throughout England and Wales, asking for their assistance in preparing returns from the parish registers of the births, marriages, and deaths at different periods. Out of about ten thousand parishes in England, one-half possess registers which were commenced prior to 1600, and of these three-fourths commence as early as the year 1570. From these registers Mr. Rickman was supplied with the number of births, marriages, and deaths, for six periods, each embracing three consecutive years, from which he calculated the average population of each period. It was then assumed that the births, marriages, and deaths were in the same proportion to the population of each period as in 1801. The result of Mr. Rickman's estimate, according to his mode of calculation, showed that the population of England and Wales in each of the following years was as under:—

	England.	Wales.
1570 . .	3,737,841	301,038
1600 . .	4,460,454	351,264
1630 . .	5,225,263	375,254
1670 . .	5,395,185	378,461
1700 . .	5,653,061	391,947
1750 . .	6,066,041	450,994

Census of 1801.—The first census of Great Britain was limited to the following objects: 1, the number of individual inhabitants in each parish, distinguishing males from females; 2, the number of inhabited houses, and the number of families inhabiting the same in each parish; 3, the number of uninhabited houses; 4, a classification of the employment of individuals into the great divisions of agriculture, trade, manufacture, and handicraft, and a specification of the numbers not included in either of those divisions; 5, the number of persons serving in the regular army, the militia, and the embodied local militia. The inquiry under the fourth head entirely failed.

Census of 1811.—The second census embraced all the points which were the subject of inquiry in 1801; but the question respecting the number

of houses was subdivided, so as to distinguish the number of houses building. With a view also of obtaining a more accurate return of the occupations of the people, the form of inquiry under this head was modified so as to ascertain, 1st, what number of *families* (not persons, as in 1801) were chiefly employed in or maintained by agriculture; 2nd, how many by trade, manufactures, and handicraft; and, 3rd, the number of families not comprised in either class.

Census of 1821.—The heads of inquiry were the same as in 1811, with an additional head respecting the ages of the population. For the first time it was attempted to ascertain the age of every person, distinguishing males from females.

Census of 1831.—The new features in this census were an alteration in the form of inquiry respecting occupations. The absence of uniformity in describing occupations not inserted in the official formula, and the difficulty of testing the accuracy of that part of the classification which was left to the discretion of the overseers, were the principal defects of this plan.

In 1801 the attempt to ascertain the occupation of every individual was a failure; and the inquiry in 1811 and 1821 had reference only to the heads of families; but this form was altered, in consequence, as Mr. Rickman states, of 'the often recurring and unanswerable doubt as to what is to be deemed a family.' The returns to the questions, as modified under the census of 1831, showed, as in 1811 and 1821, the number of families employed in, 1, agriculture; 2, in trade, manufacture, and handicrafts; and, 3, the number of families not comprised in either class: but they also showed, in addition to the information procured at any former period, the number of *persons* (males aged twenty years and upwards) employed in, 1, manufacture or in making manufacturing machinery; 2, retail trade or handicraft, as masters, or workmen; 3, the number of capitalists, bankers, and other educated men; 4, labourers employed in non-agricultural labour; 5, other males aged twenty years and upwards (not including servants); 6, male servants aged twenty and upwards; and also male servants under twenty.

The number of female servants was also returned under a separate head. The returns also showed, in reference to the occupation and cultivation of the land, the number of, 1, occupiers employing labourers; 2, occupiers not employing labourers; 3, labourers. The inquiry respecting age, which had on the whole been so successful in 1821, was abandoned, except in so far as it went to ascertain the number of males aged twenty years and upwards.

Census of 1841.—This is far more complete and comprehensive than any preceding census. The heads of inquiry were more numerous and more minute, while the results obtained are more accurate. England and Wales were divided into about 35,000 enumeration districts, each containing not less than twenty-five nor more than two hundred houses, so that each district might be completed in a single day. Two very important improvements were made as to the inquiry respecting ages and occupations. Instead of quinquennial and decennial periods being taken, as in 1821, or only the age of males aged twenty and upwards, as in 1831, the exact age of every person was ascertained. In reference to occupations, the enumerators were directed to ascertain the employment of *every* person, distinguishing sex, and whether above or under twenty years of age. A new head of inquiry was also introduced for the purpose of showing the number of persons born in the county in which they resided; the number born in other counties of the same country; and the number born in Scotland, Ireland, the colonies, and in foreign parts.

The number of parishes which made a return of all the above particulars was 9942 for England, and 838 for Wales. In the volumes of Abstracts of the Population Returns the population is given separately for 17,476 parishes and other divisions in England, and 1984 in Wales; and for Great Britain the population is separately stated for 22,303 parishes, towns, hamlets, &c., which is 5601 more than under the census of 1831. The analysis of this immense body of facts was very admirably arranged under the superintendence of the census commissioners.

Comparative Summary of the Census from 1801 *to* 1841 *inclusive.*

	1801.	1811.	1821.	1831.	1841.
England	8,331,434	9,538,827	11,261,437	13,091,005	14,995,508
Wales	541,546	611,788	717,438	806,182	911,321
Persons travelling at night, June 6	...	...	...	...	4,896
England and Wales	8,872,980	10,150,615	11,978,875	13,897,187	15,911,725
Scotland	1,599,068	1,805,688	2,093,456	2,365,114	2,628,957
Islands in the British Seas	...	...	89,508	103,710	124,079
Total Great Britain	...	...	14,161,839	16,366,011	18,664,761
Ireland	...	...	6,801,827	7,767,401	8,175,124
Total United Kingdom	...	...	20,963,666	24,133,412	26,839,885

Summary of the Occupations of Persons in Great Britain.

CLASSES.	GREAT BRITAIN.	ENGLAND.	WALES.	SCOTLAND.	ISLES in the BRITISH SEAS.
	Total of Persons.	Total of Persons.	Total of Persons.	Total of Persons.	Total of Persons.
Commerce, Trade, and Manufacture	3,110,376	2,529,073	90,133	473,581	17,589
Agriculture	1,499,278	1,157,816	103,632	229,337	8,493
Labourers*	761,868	620,492	53,430	84,573	3,373
Military	42,234	36,043	720	4,631	840
Naval, &c.	121,831	90,155	5,038	24,359	2,279
Professional	63,184	50,344	2,697	9,709	434
Other educated Persons following Miscellaneous Pursuits	142,836	120,788	3,090	18,099	859
Government Civil Service†	16,959	13,557	531	2,777	94
Parochial and other Officers‡	25,275	21,443	682	3,085	65
Domestic Servants	1,165,233	935,832	63,216	158,650	7,535
Independent Persons so returned	511,440	421,995	23,978	58,291	7,176
Alms-people, &c.	199,069	168,376	7,830	21,690	1,173
Total of Persons enumerated as above	7,659,583	6,165,914	354,977	1,088,782	49,910
Residue of Population (including Children of all Ages)	10,996,398	8,834,240	556,626	1,531,402	74,130
Total Population of Great Britain, exclusive of Army abroad, and Navy (including Convicts, Passengers, &c.) afloat	18,655,981	15,000,154	911,603	2,620,184	124,040

The first census of Ireland was taken in 1813, but in a very imperfect and incomplete manner. Six counties and the cities of Limerick and Kilkenny were omitted altogether. In 1821, and again in 1831, a census was taken in a manner which afforded no ground of complaint. The inquiry respecting age in 1821 was more successful than in Great Britain. The preface to the Abstracts of the Census Returns of 1841 is a very elaborate disquisition on the results which the returns present, and it embraces a comprehensive view of the social condition of the country.

In the colonial possessions of Great Britain a census is taken at intervals, under acts of the local legislature or under the direction of the governor. In some cases the ages of the population are ascertained; in others the religious persuasions; and in many the value and amount of stock and produce are returned.

There is not at the present time a single European state (Turkey excepted) in which a census of the population is not taken, with more or less minuteness; and this is accompanied, with few exceptions (amongst which are Scotland and Ireland), by a more or less perfect system of registering every birth, marriage, and death. [Registration of Births, Deaths, and Marriages.] In addition to these means of information respecting the population, there are in most states returns respecting property, which further illustrate the condition of the people.

In the United States of North America the representative system is partly based on numbers. A census is therefore indispensable; and provision was made respecting it by the constitution of the United States.

CENTAUR, a compound of horse and man, supposed to have sprung from the amour between Ixion and the Cloud, which he mistook for Juno. They are also called Hippocentaurs, or Horse-Centaurs. The battle of the Centaurs and the Lápithæ forms the subject of the metopes of the Párthenon, part of which are now in the British Museum; and also one of the two subjects represented on the Phigaleian frieze, which is also in the British Museum.

CENTAU'REA, a very extensive genus of plants, belonging to the cynaraceous division of *Compositæ*, but comprehending no species of any importance to man. *Centaurea cyanus*, the common Blue-Bottle of corn fields, is sometimes cultivated for the sake of its many-coloured flower-

* This column includes Labourers whose employment is not otherwise specified, also Miners, Quarriers, Porters, Messengers, and other persons variously engaged in laborious occupations.

† Exclusive of many persons who have returned themselves simply as Clerks, Messengers, &c., and who are engaged also in Trade, &c.

‡ Exclusive of many persons who are likewise engaged in trade and professions.

heads. Two others, *C. moschata* (the Purple or White Sultan of gardeners), and *C. suaveolens* (Yellow Sultan), are occasionally seen among other annuals in gardens; but the greater part are to be found only in botanical collections: many are mere weeds.

CENTAURUS, the *Centaur*, a southern constellation, a very small part of which rises in our latitude. It is situated under Virgo and Libra, and is evidently connected with LUPUS and ARA. From Ptolemy's Catalogue, it is evident that he considered the Centaur as holding the wolf (or wild beast, as it is called) in one hand, and a thyrsus in the other; and, from the proximity of the altar, it is plain that a sacrifice is alluded to. According to Grotius (notes on Aratus), the thyrsus anciently had a hare hanging from it. In some older figures, the Centaur holds a spear in both hands, which sustains the wolf, passing through its head. Hyginus makes only one constellation of Centaurus and Lupus.

CENTIGRADE means divided into one hundred degrees. The centigrade thermometer of Celsius divides the interval between the freezing and boiling points into 100 degrees. Thus 100 centigrade degrees are equivalent to 180 of Fahrenheit.

CENTIPEDE. [CHILOPODA.]

CENTLIVRE, SUSANNA, was born, it is supposed, in Ireland, about 1680. After having been twice married, the death of her second husband, while still under twenty, forced her to have recourse to her pen, as well for support as for the amusement of her lonely hours, and several of her early productions were published under the name of Carrol, being that of her second husband. She soon afterwards made her appearance as an actress, but her success was not great, nor her continuance of long duration. In 1706, she married Mr. Joseph Centlivre, principal cook to Queen Anne, and she died Dec. 1, 1723, at the age (if the time of her birth be rightly stated) of 43. Of her dramatic works, an alphabetical list is given by Baker in his 'Playhouse Companion;' but only three out of the nineteen there enumerated keep possession of the stage:—'The Busy Body,' 'A Bold Stroke for a Wife,' and 'The Wonder.'

CENTRAL AMERICA comprehends the countries which, under the dominion of Spain, were known by the name of the kingdom of Guatemala. It forms the central portion of the long isthmus which unites North and South America, and extends from 8° to 18° N. lat., and from 82° to 94° W. long. Its greatest length from S.E. to N.W. may be about 1000 miles; its breadth varies from 70 or 80 to 300 miles. The recent information given by Mr. Macgregor, concerning the commercial statistics of these regions (1847), shows that the political divisions of the countries forming the long isthmus are now in such great confusion, that the term 'Central America' must be taken rather in a geographical than a political sense.

Its boundary is mainly formed by the Caribbean Sea on the E. and N.E., and by the Pacific on the S.W. At its south-eastern point it borders on the republic of New Granada. Its most northern part extends between the British settlement of Balize and the Mexican States. The second section of the isthmus extends from the Gulf of Parita to the country which lies between the Gulf of Nicoya and the mouth of the Rio de S. Juan. It is about 280 miles in length. Between 10° 30′ and 13° N. lat. extends the plain of Nicaragua, which is about 175 miles long from south to north, and nearly as much from east to west. It is very little elevated above the sea, the lake of Nicaragua, which covers a considerable portion of it, being only 134 feet above the Pacific. It is separated from the Pacific by a range of low volcanic hills, very few of which rise to more than 700 feet above the sea. The country which lies east of this plain is intersected by many ridges of hills, running east and west, some having peaks from 7000 to 8000 feet high. Near the Gulf of Honduras the country is mostly low. The isthmus of Chiquimula extends from the mountains between Omoa and the mouth of the Rio Motagua to the innermost corner of the Gulf of Honduras; and on the Pacific, from the harbour of Acajutla to the mouth of the Rio Esclavos; there is a hilly district in the middle of this isthmus. The table-land of Guatemala occupies all the countries between the isthmus of Chiquimula and that of Tehuantepec in Mexico; the high land in the interior of the peninsula of Yucatan forms its north-eastern projection. Some parts of this table-land exceed 5000 feet in height; and its surface is in many parts traversed by ranges of hills. It descends very rapidly towards the Pacific, but more gradually towards Mexico and the Atlantic. There are two volcanic mountains, the Volcano de Agua, and the Volcano de Fuego, each of which exceeds 12,000 feet in height.

The difference in the elevation of the surface produces a corresponding difference in the climate and productions of the natural divisions of the country. The great plain of Nicaragua, with that to the north of it, on the shores of the Caribbean Sea, is only wooded along the rivers. Between the rivers, and along the coast, it forms extensive savannahs, covered with a rich verdure, and presenting occasionally a clump of high trees. The low hills however, which rise on it, are mostly wooded, especially on their declivities. The low plains near the Pacific are almost covered with forests. As the low lands are exceedingly hot, most of the European settlements have been formed on the table-lands; here the climate is healthy and agreeable. Near the Caribbean Sea the rains are very abundant.

Few countries, even in South America, are so subject to earthquakes and contain so great a number of volcanoes. Many of the hills between the lake of Nicaragua and the Pacific are volcanoes, and most of them are active. The number does not decrease to the north-west of the lake, several of them occurring on the southern and eastern shores of the bay of Conchagua. In the district of Conchagua, which is hardly more than 180 miles in length, above twenty volcanoes are known to exist. Earthquakes are most frequently felt on the table-land, where they occu-

annually at the setting in of the northern winds, but the most violent take place at the end of the dry or the beginning of the rainy season.

The river S. Juan falls into the Caribbean Sea, near 11° N. lat. It is the channel by which the lake of Nicaragua discharges its waters into the Caribbean Sea. This lake is an inland sea, of a lengthened form, being about 120 miles long and 40 broad where widest, without narrowing much at either end. Its circuit is near 400 miles. It is deep enough to be navigated by vessels of considerable size. It is only very shallow along the north-east shore for a mile and upwards into the lake. It contains several islands. The river issues from the S.E. corner of the lake, and in its progress towards the sea receives the S. Carlos and the Serapiqui. The river between the Caribbean Sea and the lake is too much impeded by rapids to be favourable to navigation; and it has therefore been proposed to cut a canal across the country for 60 miles, from S. Juan to the lake. If this were done, it might form part of a canal to connect the two oceans, for the lake at one spot is only 20 miles from the Pacific. The project of a ship canal across the isthmus is further treated under PANAMA.

The most important river of Central America is the Rio Dulce, the channel by which the Golfo Dulce discharges its waters into the Gulf of Honduras, 15° 25′ N. lat. The Golfo Dulce is a fresh-water lake, about 50 miles in circuit. On its southern banks is the small town of Yzabel, at which most European vessels land their goods destined for the interior. The Rio Polochic, which enters the Golfo Dulce from the west, rises in the table-land of Guatemala, and is a short but rapid river. The Motagua, which also rises in the table-land, flows into the Gulf of Honduras near Omoa. Several smaller rivers flow into the Gulf of Honduras, among which are the Chamalecon, the Ulua, the Limones, the Lean, the Tinto, the Patook, the Segovia, and the Blewfields. The rivers which flow into the Pacific, including the Lempa, the Michatoyat, the Usumasinta, and the Tabasco, are all short.

The lake of Peten, near Yucatan, is 70 miles in circuit, and contains many islands. The lake of Atitan, 80 miles from Guatemala, is about 50 miles in circuit, and is very deep. The lake of Guixar, near S. Salvador, is 80 miles in circuit. Near the sea are many shallow lagoons, separated from it by strips of coast. There is a geyser, or boiling fountain, near Quezaltenango.

The objects of agriculture differ considerably, according to the difference in the elevation of the soil. Wheat is grown almost exclusively in the most elevated districts of the table-land of Guatemala, and also in some districts in the hilly country. Barley, potatoes, and several European vegetables and fruits, also grow there. Where the table-land does not rise much above 5000 feet, nor sink below 4000, as in the neighbourhood of the town of Guatemala, there are extensive plantations of nopal trees for rearing the cochineal insect. At lower levels, indigo, cotton, sugar, tobacco, cacao, rice, maize, sesamum, mandioca, bananas, leguminous vegetables, capsicums, pine apples, and oranges are cultivated. Large and fine crops of most of these might be reared, if agriculture were more skilfully conducted; but the civil wars of the country have greatly reduced the amount of produce. Mahogany wood, sarsaparilla, vanilla, and Peruvian balsam are grown for exportation.

Of mineral produce, gold, silver, copper, and iron are found in several places in the hilly districts, and some mines are worked. Jasper and marble also occur. Brimstone of good quality is collected in the neighbourhood of certain volcanoes on the table-land, and salt is made along the Pacific, west of 90° W. long.

Cattle is abundant. Hides and jerked beef, as well as live stock, are exported. The horses are small, but handsome and hardy. Sheep are only reared in considerable numbers on the table-land of Guatemala, where the wool, which is rather coarse, is used for the manufactures of Quezaltenango, &c. Hogs and poultry abound, and are of good size and quality. Mules are very numerous, their consumption in the country itself being very great, as they are generally used for the transport of goods. Among the wild animals are numerous tribes of parrots, mackaws, and monkeys. The quezal, a beautiful bird, the manati, and the alligator are numerous.

The population of Central America consists of aboriginal tribes, of the descendants of Europeans, and of the mixed race or offspring of Europeans and Indians. Several Indian tribes still live in a state of perfect independence, and nearly without any intercourse with Europeans, although those along the Mosquito Shore consider themselves to be under the protection of Great Britain. Indians also form the bulk of the population in Guatemala. The whites are the descendants of the Spaniards, who have settled in this country since its conquest in 1524. They are dispersed over the whole of the country, but in none of the states do they form a majority, except in Costarica. The mixed race, in other parts of America, known under the name of *Mulattos*, are called in Central America *Ladinos*. They are pretty numerous all over the country, and constitute the most industrious portion of the population.

The manufactures in Central America, though they have much decreased, are still important. Under the Spaniards, nearly all the cotton and woollen goods required were woven in the country; but English cottons have nearly superseded those of the natives: the woollen manufacture has not been interfered with to so great an extent. Crockery, coarse furniture, and wooden utensils are also made.

It is difficult to state the precise relations which the Central American States bear to each other at the present time, on account of the frequent revolutions which occur. *Yucatan* formed part of the Mexican States till 1841, when it revolted, and constituted a new republic. [YUCATAN.] The small portion of country to the south of Yucatan, called *British Honduras*, is described under BALIZE. *Spanish Honduras*, southward of Balize, has detached itself from the other republics, against some of which it has during the last few years waged war. The *Mosquito Territory*

was never fully conquered by Spain. It is now governed by native kings, under the protection of a British resident or superintendent. The present king, George Augustus Frederick, was educated in Europe, and was formally placed upon his throne by Colonel Fancourt, the British agent, in 1845. Without directly interfering in the affairs of the government, the agent offers to the king and the chiefs counsel and advice, and maintains the alliance and protection of England. *Guatemala*, the principal state of Central America, comprehends the whole of the table-land, and some of the adjoining low-lands. Besides the two capitals of Old and New Guatemala [GUATEMALA], it contains the towns of Quezaltenango, Totonicapan, Coban, and Gualan. There is the port Yzabel near the Caribbean Sea, and the port Independencia, near the mouth of the Michatoyat, on the Pacific. The state of *Salvador* is the most populous in Central America. Besides the chief town, SALVADOR, it contains the towns of S. Vicente, S. Miguel, Santa Anna, and Sonsonate. It has also four ports—Acajutla, Libertad, Siquilisco, and Conchagua. *Nicaragua* is for the most part a hilly and thinly populated state. The chief towns are Leon, Managua, Masaga, Granada; and the harbours of Nicoya, Culebra, Realejo, and S. Juan. *Costarica* lies near the southern extremity of the isthmus: it contains some gold mines, and is very thinly inhabited. It contains the towns of S. José, Cartago, and Acajutla, and the harbours of Mantua and Punta de Arenas. Guatemala is (1847) under the sway of an Indian named Carrera. Costarica, Salvador, and Nicaragua, have all separated from it, and each has become a petty independent state.

So many devastating wars have occurred in Central America, that nothing certain is known of the present population of the towns, or of the country as a whole. Estimates formed 15 or 20 years ago are now valueless.

In 1845, 29 British vessels arrived at the Mosquito Territory with cargoes valued at 6622*l.*, while 29 vessels left, with cargoes valued at 4190*l.* In the Central American States small vessels from the United States, the West Indies, and Europe, occasionally land cargoes at the ports; but commerce generally is in as backward a state as the political government.

(Haefkin's *Central Amerika;* Thompson's *Official Visit to Guatemala;* Dunn's *Travels to Guatemala;* Humboldt; Macgregor's *Commercial Statistics; Parliamentary Papers.*)

CENTRAL CRIMINAL COURT. This is a court established in 1834, by 4 & 5 Wm. IV. c. 36, for the trial of treasons, murders, felonies, and misdemeanours committed within the city of London and county of Middlesex, and parts of Essex, Kent, and Surrey; and on the high seas. The court is held at least twelve times a year.

CENTRANTHUS, a genus of plants belonging to the natural order *Valerianaceæ*. *C. ruber*, red-flowered spurred Valerian, Red Valerian, is a native of Great Britain, in chalk-pits and on old walls. It has purple flowers, and attains a height of one or two feet. It has a sweet scent. *C. calcitrapa* is a native of the coasts of the Mediterranean, and of the more temperate parts of France. They are elegant border flowers, and will grow in any common soil, on walls or rock-work, and may be easily propagated by seed.

CENTRA'RCHUS, a genus of fishes of the section *Acanthopterygii*, family *Percoides*, and belonging to the subdivision 'with less than seven branchial rays.' In this genus the species have numerous spines in the anal fin; the tongue is furnished with a group of fine and very thickly set teeth; the pre-operculum is entire; the angle of the operculum is divided into two flat points; and the body is compressed and somewhat oval: they inhabit the rivers of North America.

CENTRE, CENTER, from the Greek κέντρον (*kentron*), a short point. This word, by its successive introduction in one sense and another, has become a generic term for any point of a figure or solid body, such that the whole of the figure or body might be collected into that point, without any alteration in some respect or other which is specified. It is, in fact, an average point, as the following detail will show.

1. *Centre of Figure.*—If any number of points be situated in given positions with respect to a plane (A), their average perpendicular distance from the plane is common to all the points of a second plane (B), parallel to (A). If two other planes (A′) and (A″) be taken, and if (B′) and (B″) be planes distant from them by the average distances of the points, then (B), (B′), and (B″) will meet in a point which is obviously distant from the three planes by the several average distances of the points. And it is proved, by the application of algebra, that the point thus determined is also distant from any other plane whatsoever by the average distance of the points; whence it may be called the centre of *figure* of the points. It is usual to call it the centre of *gravity*, which it is on one particular supposition only, namely, that the points are supposed to have *equal* weights.

2. *Centre of Gravity.*—This is the point at which, the weight of the body being collected, the equilibrium of the body and of the system, if any, of which it forms a part, will not be disturbed.

3. *Centre of Gyration.*—This term, which is almost peculiar to English mathematicians, and is now almost disused, has the following meaning: it is the point at which, if the whole of the matter in a body were collected, given forces would produce the same angular velocity of rotation in a given time as they would do if the particles of the body were distributed in their proper places.

4. *Centre of Percussion,*—that point of a revolving body which would strike an obstacle with the same force as if the whole of the matter were collected in it.

5. *Centre of Oscillation,*—the point in which the whole of the matter must be collected, in order that the time of oscillation may be the same as when it is distributed.

6. *Centre of Pressure,*—the point at which the whole amount of pressure may be applied with the same effect as it has when distributed.

CENTRI'PETAL and CENTRI'FUGAL

FORCES,—forces which urge a body *to seek* (petere) or *to avoid* (fugere) a centre; in more modern language, attractive and repulsive forces.

We intend here to confine ourselves to the term *centrifugal force*, in one particular sense in which it is used in mechanics and astronomy, because it involves a point which is frequently mistaken. The term force, as used in mechanics, implies simply any cause of motion which is external to the matter moved; and the terms accelerating force, as well as retarding force, are used with reference to the velocities of bodies, and without reference to their masses or weights. So long as velocity remains unaltered, there is neither accelerating nor retarding force: when alteration of velocity begins, then we may say that force begins to act, for all we know of force is implied in the words 'cause of acceleration or retardation.' Again, owing to the convenience of words implying causation, it is usual to give the name *inertia* to that property of matter by which it maintains its state, either of rest or motion, unless acted on by other matter. And since the state of matter left to itself is either that of rest or of uniform motion in a straight line, every other species of motion, of what sort soever, is an effect of force from without; which assertion is verified in every instance in which it can be tried.

Suppose we fasten a string to an immoveable obstacle, such as a post, and pull it, say with a force of a hundred-weight. It may not at first sight appear proper to say that the post also pulls the string, because we may not be able to conceive the latter acting, but only resisting. Nevertheless, the part which the post sustains—call it action or resistance—is still the equivalent of a force, for if it were removed, and another hand applied to the other end of the string, that hand must also pull against the first with a force of a hundred-weight before the counteraction of the moving tendency of the first pressure is supplied. And, in calculating the numerical effects of pressures, the equations of motion can take no cognisance of the cause of the pressures, but only of their amounts; whence it will arise that the effect, say of the resistance of an immoveable obstacle, may enter an equation in precisely the same manner as a physical attraction, a muscular effort, or any other mode of accelerating or retarding velocity.

Next, it must be remembered that no alteration whatever of the effect of inertia can be produced without force of some kind. Let us now suppose a small bullet attached to a string, which string is fastened to a point upon a table, friction and the resistance of the air not being supposed to exist. Let the bullet be placed in a state of revolution round the fixed point, by means of the string, and with a given velocity. It will continue to revolve round with the same velocity, and the string will be stretched by a pressure depending upon the mass of the bullet and its velocity. The reason of the permanence of the velocity is contained in a proposition which is demonstrated in mechanics, namely, that forces applied to a material point in the direction perpendicular to that of its motion cannot change its velocity, but only its direction. If, for instance, a hand could apply pressure to a moving point on a table, by means of a string, so adroitly as always to keep the pressure perpendicular to the direction of motion for the time, the whole amount of the pressure might be varied so as to make the point describe any curve, but always with the same velocity as at the outset. Now, in the present case, the bullet must describe a circle, and the direction of the string, in which the retaining pressure acts, is always perpendicular to the tangent of the circle, being always a radius. This pressure of the string must be caused by an effort to escape on the part of the bullet, arising from its tendency to continue its motion in the direction of the tangent. This is the centrifugal force, and does not arise from any tendency which the body has to fly *from* the centre, but from this circumstance, that there is in the motion above described a constrained approach *to* the centre, or rather a constrained continuance at the same distance from the centre, such as would not exist in the motion of the bullet uninfluenced from without.

This centrifugal force is thus measured: suppose, for instance, the velocity of revolution in the circle to be 8 feet per second, and the radius 10 feet. Divide the square of the velocity by the radius, or divide 64 by 10, which gives 6.4. Then the pressure is such, that were it to take the place of the earth's attraction, the bullet, being allowed to fall, would, at the end of one second, have acquired a velocity of $6\frac{4}{10}$ feet per second, instead of $32\frac{1}{6}$, which is the case with bodies falling freely to the earth. And if we ask what weight must be hung to the string, so that it may receive the same pressure as when constraining a bullet of 2 lbs. in weight to move at 8 feet per second in a circle of 10 feet radius, the answer is, such a proportion of the weight of the bullet as $6\frac{4}{10}$ is of $32\frac{1}{6}$,

$$\text{or } \frac{6\frac{4}{10}}{32\frac{1}{6}} \times 2 \text{ lbs., or } \frac{384}{965} \text{ of a lb.}$$

If then this latter weight, hung at its end, would be the utmost the string would bear without breaking, then any accession of velocity in the preceding motion would also break the string.

CENTRI'SCUS (Linn.), a genus of fishes of the section *Acanthopterygii*, and family *Fistularidæ*, viz. that of tube-mouthed fishes with spiny fin-rays. One species, the Trumpet Fish, Sea-Snipe, or Bellows Fish (*C. scolopax*, Linn.), has been, though rarely, taken on our British coast. It is not uncommon in the Mediterranean. See Yarrell's 'British Fishes,' vol. i. p. 302.

CENTRO'LOPHUS, a genus of fishes of the family *Acanthopterygii* and family *Scombridæ*. It is closely allied to the genus *Naucrates*, of which the Pilot Fish (*Naucrates ductor*) is a well-known example.

Of the genus *Centrolophus*, one species, the Black Fish (*C. niger*, Lacep.; *C. morio*, et *pompilus*, Cuv.), has been occasionally taken on the Cornish Coast. See Yarrell's 'British Fishes,' vol. i. p. 158; and Cuvier's 'Règne Animal.'

CENTRONO'TUS (Lacep.), a genus of fishes of the section *Acanthopterygii*, and family *Scombridæ*. In this genus the spines, which in most of the Acanthopterygians form the anterior dorsal fin, are free or unconnected by membrane; they have all ventral fins.

The above characters are common to a large number of the species of the Scombridæ, and hence it has been thought convenient to seize some minor distinctions for the purpose of dividing the genus Centronotus into several sub-genera. In Cuvier's 'Règne Animal,' they are as follows:—

Sub-genus *Naucrates*, or those in which the body is elongate; the tail carinated at the sides, and which have two free spines before the anal fin. To this sub-genus belongs the Pilot Fish (*Naucrates ductor*), which is well known from its habit of following vessels to a considerable distance, in order to feed upon what is thrown overboard; and it is under such circumstances that this fish has been occasionally met with on the British coast. It is about a foot in length, and of a blueish gray colour, with five broad bands of deep violet. Its shape is something like that of the mackerel, but less tapering towards the head and tail. Sub-genus *Elacates*:—The species of this genus have nearly the form of the one last mentioned, but differ in the head being depressed, the tail not carinated, and there being no free spines before the anal fin. Sub-genus *Lichia* has free spines before the dorsal and anal fins, and the tail not carinated at the sides. The *Scomber amia* of Linnæus, a large fish upwards of four feet in length, which inhabits the Mediterranean, belongs to this section. Sub-genus *Trachynotus* differs chiefly from Lichia in having the profile of the body deeper, and the dorsal and anal fins longer and more tapered.

CENTROPO'MUS, a genus of fishes belonging to the section *Acanthopterygii*, division Thoracic Perches, and family Percoides (*Percidæ*). Only one species appears to be known, the Sea Pike (*Sciæna undecimalis*, Bloch; *C. undecimalis*, Cuv.), which tenants the mouths of the great rivers of South America, where it forms a considerable article of consumption, and is in great request. It often weighs 25 lbs.

CENTROPORIS'TES (Cuv.), a genus of fishes of the section *Acanthopterygii*, and family *Percidæ* (Perches), of which the species appear to be restricted to the coasts and rivers of America. Of these, one is known in the United States by the name of the Black Perch, or Black Bass (*C. nigricans*); it is abundant in the rivers, and is much esteemed for the table. For an account of some other species, see Mitchell in 'Trans. of the Literary and Philosophical Society of New York.'

CENTUMVIRI. [JUDEX, JUDICIUM.]

CENTU'NCULUS, a genus of plants belonging to the natural order *Primulaceæ*. The only species is *C. minimus*, a very small plant with pink flowers, known by the name of Bastard Pimpernel.

CENTURION. A centurion in the Roman army was the commander of a centuria, a term which we cannot conceive to have originally signified any thing except a hundred. A centuria, as a division of an army, signified a number of men under the command of a centurio. When the Roman legion contained thirty manipuli and sixty centuries, the number of centurions would be sixty; but, as the number of the legion was not a fixed number, we must suppose that the officer called a centurion had at various times a varying number of men under him.

The pay of the soldier in the infantry is stated by Polybius at two óboli a day, and double to the centurions. The obolus is a sixth part of the Attic drachma, or one-sixth part of 9¾*d*. This would therefore make the monthly pay of a centurion about 16*s*.

The duties of the centurions were to command their several manipuli. They received their orders from the tribunes of the legion, who received theirs from the commander of the army, whom they visited every morning to receive their orders, which they then gave to the centurions. They also superintended the soldiers when they were engaged in the military works, such as castrametation. They had also to go round to inspect the watches; at least this is stated as among the duties in some passages of the Latin writers. The badge of office was a stick made of the stock of a vine (vitis).

CEOS. [ZEA.]

CEPHAE'LIS, a South American genus of cinchonaceous plants, chiefly interesting from comprehending the plant which yields the ipecacuanha root of the druggists. This, the *Cephaelis ipecacuanha*, is a native of the forests of Brazil, growing in close, damp, shaded places, and flowering in the months of January and February.

CEPHALANTHE'RA, a genus of plants belonging to the natural order *Orchidaceæ*. Three species of this genus are natives of Great Britain. *C. grandiflora*, *C. ensifolia*, and *C. rubra*.

CEPHALANTHUS OCCIDENTA'LIS, or Button-Wood, is a North American plant, belonging to the natural order *Cinchonaceæ*. It is common in swamps, ponds, and stagnant waters, from Carolina to Canada, forming a shrub from 6 to 15 feet in height, with a light spongy wood. The inner bark of its root is an agreeable bitter, and is frequently used as a remedy for coughs.

CEPHALA'SPIS, a singular genus of fossil placoid fishes, established by Agassiz on specimens from the old red sandstone of Herefordshire, Forfarshire, &c. The head-covering is like the anterior part of a Trilobite. *Cephalaspis Lyellii* and *C. Lloydii* are British species.

CEPHALONI'A, the ancient Cephallénia, an island near the west coast of Greece, and the largest of the seven Ionian islands. [IONIAN ISLANDS.] The greatest length of the island, N.N.W. and S.S.E., is 31 miles; from Cape Viscardo, 38° 29′ N. lat., to Cape Scala, 38° 4′. Its breadth is very unequal, the island being indented by several gulfs. The breadth of the island about the middle is about ten miles, but in the north part it is nearly double. Cape Scala is twenty-three miles west-north-west of Cape Chiarenza, the nearest point of the Morea. The area of Cephalonia is about 348 square miles, and the population in 1833 was 56,447, of whom 12,195

were agriculturists, 1771 manufacturers, and 815 were employed in trade. There were about 8000 acres sown with corn, 6242 planted with currants, 432 with olive-trees, 12,232 with vines, 1000 with cotton and flax, and 1000 with pulse, besides 1644 acres of pasture and 189,786 of uncultivated land. ('Official Returns of 1833 in the Tables of the Revenue, Population, &c. of the United Kingdom and its Colonies: Supplement to Part IV.')

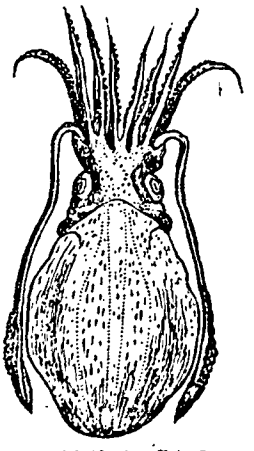
A calcareous ridge runs across the island from north-west to south-east, and its lower projections cover nearly all the island. The highest summit is about 4000 feet high: this mountain is covered with a forest. The only plain in the island lies between Argostoli and Livato, in length about six miles, and is chiefly planted with vines. The chief produce of the island is currants, of which considerable quantities are yearly exported. The other productions of the soil are oranges, lemons, figs, carobs, and excellent melons. The sea abounds with fish. The climate is very mild, but subject to storms and violent rains. Cephalonia is also subject to earthquakes.

Argostoli, the principal town of the island, lies at the foot of a mountain on the west shore of the bay of Cephalonia. It has a good harbour fit for ships of the largest size, and about 5200 inhabitants. Opposite Argostoli, across the bay, is the town of Lixuri, which has a better appearance than the capital, and is in a more wholesome situation, and has 5000 inhabitants. Livato, at the north end of the gulf, has considerable trade. The Cephalonians are said to be a spirited, intelligent, industrious, and persevering people. Cephalonia has manufactures of cottons, and of carpets of mixed wool and goats' hair, which are exported chiefly to Italy. Many of the Cephalonians are employed as sailors. Others repair in the summer to the Morea to assist in the harvest. The greater part of the population are of the Greek church: the others are of the Latin church. There are free schools supported by the government, besides private schools.

Cephalonia became subject to Rome in B.C. 187. After the division of the empire, it was subject to the Byzantine emperors till the twelfth century, when the Franks dismembered the eastern empire. Cephalonia was then subject to the family of Tocco from Naples, who were despots or princes of Achaia. One of these princes gave it to the Venetians in 1224. It was invaded by the Turks in 1479, and retaken by the Venetians twenty years after, who retained it till the fall of the Republic in 1797, when the French took possession of it; but, being driven away by the Russians in 1799, Cephalonia was made part of the new state of the Seven Islands under the protection of Russia. By the peace of Tilsit in 1809, the French took possession of it again, but were soon after driven away by the English. For the present government of the Ionian Islands see CORFU.

CEPHALO'PODA (Μαλάκια (Malakia) of Aristotle; *Mollia*, of Pliny; *Cephalophora* of De Blainville; *Antlibrachiophora* of Gray), a class of mollusks commonly called Cuttle Fishes. The Cephalopods may be described as marine animals, having the body developed in a muscular sac or purse (a modification of the mantle), with a large head, crowned by eight or ten long flexible but powerful appendages, always furnished with suckers on their internal surface, by means of which they not only creep along at the bottom of the sea, but grasp their prey, and force it into the mouth, which is armed with a parrot-like beak, which these appendages encircle. The suckers are sometimes armed with a long sharp horny claw, as in *Onychoteuthis*, or with a series of sharp-pointed curved teeth as in the Calamary (*Loligo vulgaris*). The respiratory organs are branchial, and contained in a pouch which communicates with the surrounding medium by a sort of funnel, projecting beyond the edge of the mantle, and pointing to the head. The eyes are large and well developed; the head, in fact, is gifted with all the usual senses. The tongue is beset with horny points; the œsophagus widens into a kind of crop, leading to a gizzard, to which succeeds a third stomach, membranous and somewhat spiral, into which the liver pours the bile. The intestinal canal terminates in the funnel. Generally there are two hearts for the propulsion of the blood through the respiratory organs, and one for the circulation of the arterial blood through the body. The sexes are distinct. Females oviparous. Many species are provided with an ink bag, from which a duct leads into the funnel or siphon, and through this the ink is ejected at the will of the animal; staining the water around, it conceals the animal as in a cloud from observation. The skin of the naked species is changeable in its colours. These animals are most extensively distributed, and are wary, active, and voracious, preying upon fishes and crustacea. They dart through the water with singular velocity. It is in these alone of the mollusks that definite rudiments of a skeleton are to be found. This skeleton is in a cartilaginous condition, but still it cannot be mistaken; a large cerebral cartilage incloses and protects a ganglion, which may be regarded as a brain, gives attachment to the muscles of the tentacula, incloses an auditory apparatus, and supports the eyes. Other cartilages occur in different parts, composing the rudiment of a spine. But this commencement of a skeleton must not be confounded with a corneous or calcareous structure, contained in a cavity within the dorsal portion of the mantle, and there secreted by the sides of the chamber itself. In the Cuttle-Fish (*Sepia officinalis*) the dorsal plate or *gladius* is calcareous, consisting of a multitude of laminæ not closely compacted together, but kept at a little distance apart by minute but very numerous pillars, the whole forming that light and porous structure, known in the shops as cuttlefish bone. In the Calamary (*Loligo*) this *gladius* is a long horny substance somewhat resembling the head of a spear. In both cases the plate is analogous to the small lamina found in the mantle of some slugs, and may be regarded as a rudimentary shell, the vestiges of a structure which is developed in the Argonaut and Nautilus, in which animals we find it assuming the form and use of a true shell, over which the mantle

is more or less reflected, but in which the animals are housed.



Cuttle Fish (*Sepia officinalis*).

The natural division of the class is into Naked Cephalopods (*Cephalopoda nuda*), and into Shell-protected Cephalopods (*C. testacea*).

Of the *Naked Cephalopods* the common Cuttle-Fish or Polypus (*Octopus vulgaris*), the *Sepiola*, the *Onychoteuthis*, the Calamary (*Loligo*), the officinal Cuttle-Fish (*Sepia officinalis*) may be cited as examples.

These animals are not without their use to man. In many parts of the continent some species are regarded as delicacies of the table. Among the ancients they were in high esteem. Cuttle-fish bone is employed for many purposes, and the prepared ink of the Cuttle-Fish is made into a pigment.

In the hotter latitudes Cuttle-Fishes of gigantic size occur, which have been known to drag down men, and have even endangered boats, entwining them with their strenuous tentacles. We need not add, that they are greatly dreaded.

The *Testaceous Cephalopods* are divided into—1, Polythalamous Cephalopods, with a multilocular subinternal shell; and 2, Monothalamous Cephalopods, with the shell unilocular and external, and partially covered by the mantle.

To the first division belongs the Belemnites, Orthoceratites, Mammulites, Ammonites, and other fossil genera, together with the NAUTILUS. To the second section belongs the genus *Argonauta*, which is described under PAPER NAUTILUS.

Into the minutiæ of the classification of the various genera it is impossible here to enter: those of the Fossil Polythalamous Cephalopods are very numerous, and are differently arranged by Lamarck, Leach, and De Blainville, whose works should be consulted. To these we may add the works of Aristotle, Pliny, Swammerdam, Needham, Baker, John Hunter, Monro, Scarpa, Tilesius, Cuvier, Home, Rathke, Bosc, Roget, Grant, Poli, Delle Chiaje, Rafinesque, Carus, San Giovanni, Coldstream, Mayer, Lesueur, Ranzani, roderip, Quoy and Gaimard, Gray, Defrance, ontfort, Buckland, G. B. Sowerby, J. Sowerby, D'Orbigny, Ferussac, Dujardin, Owen, and, above all, the article 'Cephalopoda,' by the last-named author, in 'The Cyclopædia of Anatomy and Physiology,' where the latest and best information as to the organisation of the class is to be found. [BELEMNITE; CARINARIA; CORNU AMMONIS; SEPIADÆ.]

CEPHALOTA'CEÆ, a natural order of exogenous plants. It consists of but one genus, and that of only one species, the *Cephalotus follicularis*, New Holland Pitcher Plant. In cultivating this plant it should be placed in turfy peat soil, either in a box or pot, and kept rather moist; this may be effected by placing the pots in pans of water. The plants are always the healthier for allowing moss to grow over the surface of the soil in which they are planted. They can only be increased by seed.

CEPHEUS, a constellation, surrounded by Cassiopeia, Ursa Minor, Draco, and Cygnus, comes on the meridian at midnight in the middle of August, and at eight o'clock in the middle of October. A line drawn from the bright star in Cygnus to the Pole Star will be nearly bisected by α and η of this constellation. Cepheus, the king of Ethiopia, was the husband of Cassiopeia and the father of Andromeda, and was placed in the heavens, according to Hyginus, that no one of this remarkable family might be absent. He is represented in old plates as a man with a tiara on his head, kneeling on one knee, and with his arms extended.

CEPHI'SUS. [ATTICA; BŒOTIA.]

CEPHUS, a genus of hymenopterous insects of the family *Xiphidriidæ* (Leach). Of this genus Mr. Stephens enumerates ten British species, most of which are black, with yellow fasciæ.

CEPO'LA (Linn.), a genus of fishes of the section *Acanthopterygii*, and family *Tænioidei*, or riband-shaped group. One species, the Red Bandfish or Red Snakefish (*Cepola rubescens*), has occasionally been taken on the coast of Devonshire and Cornwall. It is a native of the Mediterranean, and, according to M. Risso, is known at Nice by the name of Fire-Flame and Red Riband, from its colour and appearance when swimming. Length from 10 to 15 inches and upwards. (Yarrell's *British Fishes*, vol. i. p. 195.)

CERAM. [MOLUCCAS.]

CERAMBY'CIDÆ, a family of coleopterous insects (beetles) of the section *Longicornis* (Latreille). The Cerambycidæ are found in all parts of the globe, but abound most in hot climates. They constitute a most extensive group of coleopterous insects, remarkable for the very great length of the antennæ. One of their most important functions appears to be to assist with other wood-feeding insects in the removal of old and decaying trees; it is in the larva state principally that this business is performed. The parent insect deposits her eggs in a hole excavated for that purpose; and the larvæ, when hatched, commence feeding upon the wood, excavating burrows in various directions, but mostly longitudinal. In this state they live two or three years, and the perforations they make are very extensive.

In their perfect state the Cerambycidæ frequent flowers, especially of the umbelliferous kind; the large species are often found on the trunks of trees. Different individuals of the same species vary extremely in size, a circumstance frequently observed in those insects that feed on wood, and arising most probably from the degree of moisture or dryness of the food.

Several genera are included under this family, for the characters of which see Latreille, Cuvier's 'Règne Animal,' vol. v. p. 110, and Stephens's 'Illustrations of British Entomology.'

CERAMIEÆ. [WATER-PLANTS.]

CERA'MIUS, a genus of hymenopterous insects of the section *Diploptera*, Latreille. This genus is arranged by Latreille next to the true wasps; it is readily distinguished by the superior wings being flat (not folded as in the wasps) and having only two cubital cells; the labial palpi are longer than the maxillæ. [VESPIDÆ.]

CERAMLAUT ISLANDS. [MOLUCCAS.]

CERAPUS, a genus of amphipodous crustaceans, the chief character of which consists in the size and strength of the four antennæ; they are nearly of the same length, the upper having four joints, the lower or lateral five. These antennæ are hairy, and perform in some degree the office of limbs. The general figure is shrimp-like; but the first pair of limbs are small; the second constitute strong pincers. As an example we may notice the *Cerapus tubularis*. Like the larvæ of the Phryganeæ, this extraordinary crustacean, which is about six lines in length, lives in a small cylindrical tube (considered to be that of a Tubularia) exposing only the head, the four large antennæ, and the first two pairs of feet. This species occurs in abundance in the sea near Egg Harbour, in the United States, in the midst of Sertulariæ, which are supposed to form its principal food. (*Journal of the Academy of Natural Science of Philadelphia*, vol. i. p. 49, pl. 4; Cuvier's *Règne Animal*, vol. iv. p. 122.)

CE'RASIN, a peculiar gum, which exudes from the cherry-tree and plum-tree. Externally it resembles gum Arabic, but its properties are different. Cherry-tree gum consists of — arabin, 52.1; cerasin, 34.9; water, 12.0; ashes, 1.0.

CERASTES. [VIPERIDÆ.]

CERA'STIUM, a genus of plants belonging to the natural order *Caryophylleæ*. There are nine British species of this plant, none of which are remarkable for any quality they possess, and are not even ornamental plants.

CE'RASUS, a genus of hardy trees, belonging to the amygdaleous division of the natural order *Rosaceæ*, and including the common Cherry among its species. It is hardly different from Prunus, there being little or nothing to distinguish it beyond its leaves when young being folded flat, instead of being rolled up. Botanists seem however pretty well agreed in looking upon the cherries as a genus distinct from plums. The species may be divided into the True Cherries, the Bird-Cherries, and the Cherry Laurels.

1. TRUE CHERRIES. — The flowers growing in umbels or singly, appearing earlier than the leaves.

C. avium, the Wild Cherry, a native of the woods of Europe and the west of Asia, and in a cultivated form common in gardens. In this country it occurs as far to the north as Ross-shire, where it exists in the form of a dwarf bush propagating itself rapidly by the roots. The wood is remarkable for the large size of its medullary processes, which give its longitudinal section a bright satiny lustre, and render it well suited for ornamental cabinet work. To this species belong the Merise, Morello, Kentish, and some other kinds.

C. vulgaris, the Common Cherry, is found wild in the woods of Asia Minor, where it acquires a very large size. One variety is chiefly seen in gardens, the other grows in woods in the interior, particularly on the banks of the Sakari, the ancient Sangarius. The trees attain a gigantic size; they are ascended by perpendicular ladders suspended from the lowest branches. It was introduced into Europe by the Romans under Lucullus, about half a century before the birth of Christ, and has ever since formed one of the most esteemed varieties of dessert fruit. It is to be presumed that this exotic species is the origin of the sweet large cherries called Bigarreaus, Guignes, and the like, to which must undoubtedly be added the Tartarian cherries of the English gardens.

C. chamæcerasus, the Ground Cherry, a dwarf species, never rising above 3 or 4 feet high, is common in Lower Austria and Hungary.

C. nigra, the Black American Cherry, is rather a handsome tree, with loose umbels of pinkish flowers. The fruit is as large as a moderately sized cherry.

C. serrulata, Fine-toothed Cherry, a native of China, and only known in our gardens with double flowers. These are exceedingly delicate and beautiful, but they appear at so early a season as to be liable to injury from the spring frosts.

C. depressa, Sand Cherry, is found in Canada and the more northern of the United States, but appears to be unknown in the southern States. In our gardens it is a handsome bush, but short-lived. The nurserymen propagate it by budding on a plum-stock.

C. prostrata, the Spreading Cherry, a small prostrate bush, found on the sea-coast of Candia and on the mountains of Dalmatia and Asia Minor, where it enlivens the rocks with its gay pink blossoms late in the spring. In this country it is rare. It will live without protection in winter, but it prefers a moderate degree of shade, and is admirably suited for rockwork in sheltered places.

C. Japonica, the Dwarf Almond, a native of Japan, and long known in our gardens as the double dwarf almond, one of the most beautiful objects that appear in the month of March. Its flowers in their double state are of a pale pink, with the delicate petals arranged with the most artificial symmetry, so as to resemble curious shell-work. Although quite hardy, yet this species should be trained to pales or walls, so as to be sheltered from the frosts that are so common at the early season when its flowers appear.

2. Bird Cherries.—Flowers in long racemes, appearing after or at the same time with the leaves.

C. Mahaleb, the Perfumed Cherry, a shrub or small tree, remarkable for the powerful and agreeable odour of its flowers, and the bitter nauseous taste of its fruit.

C. Padus, the common Bird Cherry, a common species, wild in the woods and hedges of the middle parts of Europe.

C. Virginiana, the Choke Cherry, is a large tree growing in the United States, from 80 to 100 feet high. Its fruit is not very edible in a recent state, but when dried and bruised it forms an esteemed addition to pemmican. The timber is among the best in the United States for cabinet-makers' work. In this country it forms rather a graceful though roundish-headed tree, from 20 to 30 feet high; and its shining though deciduous leaves give it almost the appearance of an evergreen.

C. capollim, Mexican Bird Cherry, a native of the mountains of Mexico. In this country it is rather tender, but forms a handsome object when trained to walls or palings. Its bark is reputed a valuable febrifuge.

3. Laurel Cherries.—Flowers growing in long racemes, appearing with the leaves. Leaves evergreen.

C. Caroliniana, the Carolina Laurel Cherry, a very uncommon species in the collections of this country, to the climate of which it is not adapted. It is said to be one of the most ornamental of the trees of Carolina, where it grows on islands and along the banks of rivers, from 30 to 50 feet high, with a regular oval head. Its leaves are very poisonous, and frequently in the spring of the year destroy cattle that are tempted to browse freely on them.

C. lauro-cerasus, the common or Broad-leaved Laurel (Cherry). This valuable and common evergreen, which now gives half their richness to the varied pleasure-grounds of Great Britain, which is so hardy that no frost seems to affect it, which is equally capable of resisting the greatest heat and drought of summer, and which will flourish either in the most exposed or the most shaded situations, is a native of the country near Trebizond, in Asia Minor, and was sent from Constantinople to Ecluse, in the year 1576, by the imperial ambassador Ungnad. It is multiplied in the nurseries by layering, cuttings, and seeds. This species is remarkable for the abundance of hydrocyanic acid secreted in its leaves.

C. Lusitanica, the Portugal Laurel (Cherry), a native of Portugal, and also found in the Canaries, where it acquires a height of 60 or 70 feet. This is less hardy than the preceding; it is less easy to transplant, and will not grow so well under other trees: nevertheless, it is one of the most useful of our naturalised evergreens. It produces fruit in abundance in England, from which it is readily propagated.

CERATES, the name given to certain combinations of wax with other substances, which are used as external applications in the treatment of various surgical cases. They are of a degree of consistence intermediate between that of plasters and that of ointments, and, according to the nature of the materials united with the wax, are capable of serving different ends. They may be emollient, when applied to inflamed or chapped surfaces, or stimulating, when applied to indolent ulcers, and in the case of wounds or abraded skin are useful in excluding the air, and preventing the dressings from adhering.

CERA'TINA, a genus of hymenopterous insects of the section *Mellifera* and family *Apidæ*. Of this genus a little Bee, *Ceratina cærulea* (*Apis cyanea*, Kirby), which is not uncommon in this country, is an example. The female makes curious cells for her brood. She selects the dead branches of the bramble or of the sweet-briar, and with her mandibles excavates the pith, until a cylindrical burrow of considerable length is formed; this is then divided, generally into eight or nine cells, by partitions formed of the pith which was dislodged, mixed with a glutinous secretion. In each cell, as it is formed, an egg is deposited; it is then furnished with a portion of honey, which serves for the food of the larvæ when disclosed. (Kirby's *Monogr. Apum Angliæ; Ann. du Muséum d'Hist. Nat.*, vol. x.)

CERATONIA SILIQUA, St. John's Bread, or the Carob Tree, is a remarkable plant, found wild in all the countries skirting the Mediterranean, especially in the Levant. At Malta it is almost the only tree that grows, relieving the irksomeness of the white stone inclosures by its dark foliage. It belongs to the natural order *Leguminosæ*. The pods contain a sweet nutritious pulp, and are sometimes seen in the fruiterers' shops in London: they are a common article of food in the countries where the tree grows wild. It has obtained its name of St. John's Bread, from its being supposed to be the tree which yielded the honey eaten with the locusts by St. John in the wilderness.

CERATOPHY'LLEÆ, a small and obscure group of aquatic plants, comprehending the single genus *Ceratophyllum*.

CE'RBERA, a genus of apocynaceous plants, containing, among other poisonous species, the *Cerbera tanghin*, from which the tanghin poison of Madagascar is procured. The kernel of the fruit must be a very powerful poison, for it is not much larger than an almond, and yet one is sufficient to destroy the lives of many persons. Radama, the late king of Madagascar, abolished the use of it as an ordeal, which had been practised for many ages as a supposed means of detecting crime. A portion of the kernel was given to the suspected person by the Skidor priest. If he recovered, he was declared innocent; but if the poison took effect he was considered guilty, and speedily buried. Those that recover are supposed to bear a charmed life ever afterwards, and are respected as the peculiar favourites of the gods.

CE'RBERUS, the watch-dog of the infernal regions.

CERBERUS, a genus of Ophidians (Serpents), established by Cuvier, and allied to the Pythons. Like the Pythons, they have almost the entire surface of the head covered with small scales,

plates occurring only around and anterior to the eyes. Hooks or rudimentary limbs at the base of the tail are wanting. Sometimes the subcaudal squamæ are simple, sometimes double in the same species, a 'proof of the slight importance of this character.'. Notwithstanding the suspicious appearance of the serpents of this genus, they are not venomous. Example, *Coluber cerberus* of Daudin. It is a native of India. Length from 3 to 4 feet and upwards. Russell describes it under the Indian title of *Karoo Bokadam*. He received his specimen from Ganjam.

CERCIS SILIQUASTRUM, the Judas Tree, so called from the tradition that it was upon a plant of it, near Jerusalem, that the betrayer of our Saviour hanged himself. It is very beautiful in all its stages. Very early in spring, flowers of a bright pale red burst out before any leaf appears, not only from every part of the branches, but from the trunk, piercing the thick strong bark nearly down to the root in a very remarkable manner, and it is for this reason called Red Bud. These buds are gathered and used with other raw vegetables by the Greeks and Turks in salads, to which they give an agreeable colour and taste. It is very common in England, where it proves quite hardy, but it does not flower well unless in a very sheltered situation, or when trained to a wall.

CERCOPITHECUS. [GUENONS.]

CERDAGNE, a district formerly belonging to Rousillon, but now forming the arrondissement of Prades and part of that of Céret, in the department of PYRENE'ES-ORIENTALES.

CE'RE', ST. [LOT.]

CEREBRUM. [BRAIN.]

CEREOPSIS, a genus formed by Latham on a bird from Australia, which he regarded as belonging to the wading or grallatorial order, but which belongs to the natatorial order, and is now placed within its boundaries. The bird to which we allude is the Cereopsis Goose of New Holland (*Cereopsis Novæ Hollandiæ*), the only known species of the genus. The Cereopsis, in the form of the bill, the length of the leg, and the curtailed extent of the webs between the toes, departs considerably from the ordinary *anseres*, or geese, and is one of the least natatorial of the order; indeed it seldom takes to the water, and feeds chiefly on grass. M. Bailly states that on Preservation Island it takes up its abode upon grassy declivities, and Captain Flinders found it on Goose Island (so called from the multitudes of these birds), amongst the grass and on the shore. Its usual weight is from seven to ten pounds; it has a deep, hoarse, clanging, and though a short yet an inflected voice. Its flesh is excellent.

The Cereopsis, of which even specimens were once deemed great rarities, is now well known; it lives and breeds freely in our vivaria, and several may be seen by those who visit the gardens of the Zoological Society. When in charge of their young, the adults are very pugnacious, and are at all times rather spiteful. That this bird might be naturalised easily and with advantage, we have not the slightest doubt: its bill is far better formed for grazing than that of our common goose, and it does not require water; it is familiar, easily domesticated, and requires only ordinary attention.

The Cereopsis Goose is very handsome, the top of the head is pale gray, the rest of the plumage slate gray, each feather on the back and shoulders being margined with a paler tint, while the greater coverts and secondary quill feathers have a round dusky spot near the extremity. Quill and tail feathers dusky black. The bill is elevated, obtuse, short, and covered except at the tip with a cere or membrane, in which are the nostrils; cere, yellow; tip of the bill, black; tarsi, orange yellow; toes and short webs, black.

Cereopsis Goose (*Cereopsis Novæ Hollandiæ*).

For an account of the anatomy of this species, by Mr. Yarrell, see 'Proceeds. Zool. Soc.,' 1831, p. 25. For its history from its discovery to the present time, see 'Gardens and Menageries' by the late E. T. Bennet, Esq. It is noticed by Bailly, Flinders, D'Entrecasteaux, and other voyagers who visited New Holland soon after its discovery. See also Temminck, and Gould, who figures and describes it in his 'Birds of Australia.' It is the opinion of many zoologists that the Cereopsis forms a link between the geese and the *Ardeidæ*, or Heron and Stork tribe. To this opinion we cannot assent: the Ardeidæ are all essentially carnivorous, feeding on fish and reptiles; the Cereopsis is essentially graminivorous, and formed for traversing grassy spots, the fertile borders of rivers, or the shore.

CERES. [PLANETS, SMALL.]

CERET. [PYRENE'ES-ORIENTALES.]

CEREVI'SIÆ FERMENTUM, Yest, Barm, or Zumin, has been known as long as fermented drinks, being the active or exciting agent by which they are formed out of saccharine juices. It is employed both internally and externally. In the former case, the malt which supplied the saccharine principle has often been given along with or instead of it, under the name of malt or wort. It was highly commended by Dr. Macbride, in the treatment of scurvy, before the utility of lemon-juice was generally recognised; and some recent writers have given instances of its advantageous employment. The objection to its use is, that it generally increases the diarrhœa. But this is not invariably the case. It has been recommended in typhus fever, and enemata made with it have proved useful against typhoid tympanites. The yest poultice is an excellent application to

putrid and gangrenous ulcers, with offensive discharge and unhealthy granulations.

CE'RIA a genus of dipterous insects, of the family *Syrphidæ*. Of this genus three species only are known. The colouring is black and yellow, which, together with an elongated and somewhat ovate form of body, gives them a resemblance to wasps. Of the three species one (*C. conopsoides*) is English, and it is extremely rare.

CERIGO. [IONIAN ISLANDS.]

CERINTHUS, whence the word 'Cerinthians,' by which his followers were denominated, was by descent a Jew, and born not many years after, if not before, the death and ascension of Christ. He was one of those persons who looked upon the doctrine of our Saviour as not intended to supersede the doctrine of Moses and the Scribes, but to be engrafted upon it, and when perfectly received to be taken in union with the doctrine and institutions of his own nation, even to the point of circumcision. This opinion prevailed very extensively in the first age of the church, as is evident from much of the New Testament. But Cerinthus had some other notions concerning the creation of the world and the person of Christ. On account of those opinions he has been commonly placed among the class of heretics.

Epiphanius names him as one of those who opposed St. Peter and St. Paul; and Irenæus says that St. John wrote his Gospel with the express intention of confuting the errors of Cerinthus.

CERIUM, a peculiar metal discovered, in 1804, by Hisinger and Berzelius, in a mineral previously confounded with wolfram, and now called *cerite*. Cerium is pulverulent, chocolate-coloured, inflammable in gaseous chlorine and the vapour of sulphur. It decomposes water readily. When heated it burns long before redness. Its atomic number is 46.

Cerium combines with many other elements. With *oxygen* it forms two oxides; the first or protoxide (O^1Ce^1) is a white solid; the sesquioxide (O^3Ce^2) is an infusible brick-red substance, which combines readily with acids to form salts. With *chlorine* cerium forms a white, porous, fusible, soluble substance, composed of Chl^1Ce^1. With *bromine* it forms two bromides, of which little is known. With *fluorine* it forms a fluoride crystallised in six-sided prisms. With *sulphur* it forms two sulphurets, one of which is changed by heat into the other. With *selenium* it forms a powdery reddish brown substance, having a disagreeable odour. With *phosphorus* and *carbon* it forms black compounds.

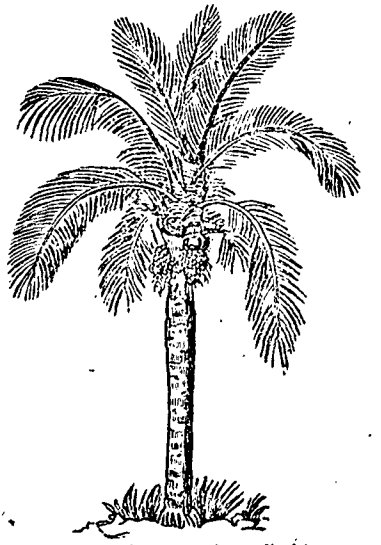
The oxides of cerium combine with nitric, carbonic, sulphuric, and phosphoric acids to form salts. The salts of the protoxide are mostly colourless, sweet-tasted, and soluble in water. The salts of the sesquioxide are generally of a yellowish red colour.

Ores of Cerium.—The principal ores of this metal are *cerite, cerine,* and *allanite*. Cerite is a pale dull red substance, slightly translucent, and having a specific gravity 4.912. Cerine is a brownish black imperfectly crystallised substance, with a slightish metallic lustre, and a specific gravity 4.173. Allanite is a crystal, in doubly oblique prisms: it is brownish black, opaque, slightly lustrous, and has a specific gravity 4.000. All of these minerals contain silica and one of the oxides of cerium.

CERO'COMA, a genus of coleopterous insects of the family *Cantharidæ* (Latreille). About six species of this genus, so remarkable for the extraordinary antennæ of the males, have been discovered, all of which are European; they make their appearance during the summer months, and frequently in great numbers on the same spot. They are found on flowers, particularly those of the wild chamomile, &c.

CERO'XYLON, ANDI'COLA, the Wax-Palm of South America, is one of the most remarkable plants in the large natural order to which it belongs.

It has received from the American Spaniards the name of *Palma de Cera,* or Wax-Palm, on account of the abundance of that substance yielded by the stem. It grows in that part of the Andes which separates the valley of the Magdalena from that of the Cauca River, in 4° 35′ N. lat. Below the snow-capped mountains called Tolima, San Juan and Quindiu, especially the last, the Ceroxylon, grows in all its grandeur, elevating its majestic trunk, coated with a thick incrustation of wax, to the height of 180 feet among the most rugged precipices of the wild region which it inhabits. This species avoids the heat of tropical plains, and seems incapable of existing except in regions where the temperature is lowered by elevation in the air, and the contiguity of perpetual snow. It does not extend over more than 15 or 20 leagues of country altogether. Its roots are fibrous and very numerous, the main root being thicker than the stem itself. The trunk is distinctly marked by rings caused by the fall of the leaves, which are from 18 to 20 feet long. The



Wax-Palm (*Ceroxylon andicola*).

spaces between the rings are pale yellow, and smooth like the stems of a reed, and covered with

a thick coating of wax and resin. This substance, melted with a third of fat, makes excellent candles. Vauquelin ascertained that this vegetable matter consists of two-thirds resin, and one-third wax, which is only a little more brittle than bees' wax.

CERTHIA. [CREEPER.]

CERTHILAUDA. [LARKS.]

CERTIORA'RI is a writ issuing from one of the superior courts, directing the judges or officers of an inferior court to transmit or cause to be certified (*certiorari facias*) records or other proceedings. The object of the removal is either that the judgment of the inferior jurisdiction may be reviewed by the superior court, or that the decision and the proceedings leading to it may take place before the higher tribunal. The 5 & 6 Will. IV. c. 33, enacts that no certiorari shall issue to remove indictments or presentments from inferior courts to the Court of King's Bench, at the instance of a prosecutor, without leave obtained from that court, as by a defendant. In order to avoid the occurrence of frivolous appeals, it is usual, in statutes which give summary jurisdiction to inferior tribunals, to restrict, or altogether take away, the right to a certiorari.

CERUSE, or WHITE LEAD. [LEAD.]

CERVANTES. [SAAVEDRA.]

CERVICOBRANCHIATA (Mollusca), De Blainville's second order of his sub-class *Paracephalophora Hermaphrodita*. Organs of respiration in a large cavity situated above the neck and opening widely in front. Head distinct, with two conical contractile tentacula; eyes sessile at their external base.

Family 1, RETIFERA. Organs of respiration in the form of a net on the *plafond* of the branchial cavity.

Genus *Patella* (Limpet). Body more or less circular; conical above, flat below, and furnished with a large oval or round foot, which is thick and overpassed on the whole of its circumference by the edges of the mantle, which are more or less fringed. There is a complete series of vertical membranous plates in the line of junction of the mantle with the foot. Shell oval or circular, with an upright summit, or more or less curved forwards. The cavity simple, and more or less deep; the border entire and horizontal. Muscular impression in the form of a horse-shoe, opening forwards.

Of the various species of limpet which come under the genus Patella, we may mention *Patella vulgata*, common in the European Seas, and subject to endless variety; *P. deaurata*, Strait of Magelhaens, &c.; *P. compressa*, Indian Seas; *P. scutellaris*, *P. cochlearia*, *P. pectenata*, Mediterranean; and *P. cymbularia*.

The *Patellæ* are very widely spread, and few seas are without them. None however appear to have been observed in the Arctic seas, either by Captain Parry (1819) or Captain Ross. The larger species are found principally in warm climates.

This genus is one of those which has the power of absorbing the shells of other mollusks or rocks, and thus forming cavities or depressions on them. 'The *Patella cochlea**,' says Mr. Gray, in his interesting paper on the economy of molluscous animals ('Phil. Trans.,' 1833), 'is often found at the Cape of Good Hope, where it lives almost exclusively, attached to a large species of the same genus, on the surface of which it forms a flat disk, exactly the size of its mouth. To form these flat disks (of which there are so generally two, one on each side of the apex of the larger *Patella*, as almost to form a character of the species), and to assist in the increase of its size, the animal appears also to absorb the coralline or other similar substances with which the larger shells are abundantly covered. The common *Patella* of our own coast, when long adherent to another shell of its own species, to chalk, or to old red sandstone or limestone, also forms for itself a deep cavity of the same form as its shell, and evidently produced by the dissolution of the surface to which it is affixed.' These observations will strike every one who may take an interest in such subjects, and has opportunities of examination.

The species are numerous, but we think it highly probable that many of these will prove to be mere varieties when the subject comes to be deeply investigated.

Patella occurs in a fossil state, but not abundantly; according to G. Sowerby, they occur in the great oolite, in the lias, and perhaps in the Oxford clay and chalk marl of the secondary series, in the *calcaire grossier*, and also in the crag of the diluvian formation.

Family 2, BRANCHIFERA. Organs of respiration, two large equal pectinated branchiæ.

Genus *Fissurella*. Fleshy disk or foot beneath the belly, as in Patella, and a conical shell fixed upon the middle of the back, but not always entirely covering it; for this shell is pierced at its summit with a small aperture, generally oval, which, according to Cuvier, serves at the same time as a passage necessary to respiration and as an outlet for the excrements. Tentacula conical, with the eyes at their external base. Sides of the foot fringed with filaments. Muscular impression as in Patella.

As examples of the genus we may enumerate *Fissurella nimbosa*, *F. rosea*, Guiana, and *F. Græca*. Geographical distribution and habits like those of Patella.

The fossil species are few in number, and, according to G. B. Sowerby, are found in the truly marine formations above the chalk.

Genus *Emarginula*. Cuvier observes that the *Emarginulæ* have exactly the same structure as the *Fissurellæ*, with this exception, that the former, instead of the aperture at the apex of the shell, have in their mantle and shell a small slit or notch at their anterior border, which opens into the branchial cavity. The borders of the mantle envelope a great portion of those of the shell.

Genus *Parmophorus*. This genus differs from *Emarginula* only in wanting the notch at the anterior border of the mantle and shell. M. Deshayes observes that the general aspect of the shells would lead the zoologist to separate this genus from *Emarginula*, while the structure of the animals leads him to fuse them into one. Most zoologists consider *Parmophorus* in the light of a mere section of the former genus.

* Cochlear.

We may enumerate the following species:—*Emarginula Blainvillii, E. fissura, E. emarginata, E. depressa, Parmophorus australis.*

Fossil forms of these genera are rare. They occur in the *calcaire grossier*, and its contemporary strata, in the crag of Suffolk, Essex, and Norfolk, and in the Bath oolite. We may here observe that Cuvier places *Patella* in his order *Cyclobranchiata*, and *Fissurella, Emarginula*, and *Parmophorus* in his order *Scutibranchiata*.

CERVUS. [DEER.]

CERVUS E'LAPHUS (*Hartshorn*). The antlers of the hart, or stag, shed annually, yield the part used in medicine, called *cornu cervinum*, the shavings or raspings of which are termed *rasua*, or *ramenta*. Merat-Guillot gives as the constituents—soluble cartilage (gelatine), 29.0; phosphate of lime, 55.5; carbonate of lime, 1.0; water and loss, 14.5. The gelatine is readily extracted by boiling water, and its abundance is such that one part to two of water, reduced by boiling to two-thirds or three-fourths, furnishes a consistent jelly. This is in general easily digestible, and suitable to convalescents.

The phosphate of lime procured by incineration of hartshorn is ordered to be employed in preparing the *Pulvis Antimonialis*.

Hartshorn was formerly used as the source of ammonia; hence it was termed Volatile Spirit of Hartshorn. [AMMONIA.]

CE'SARI, GIUSEPPE, an Italian painter, commonly called *Il Cavaliere d'Arpino* from the birthplace of his father, was born about 1568. An early displayed proficiency in painting, evinced while working in the loggie of the Vatican, caused him to become the favourite of Popes Gregory XIII., Sixtus V., Clement VIII., Paul V., and Urban VIII., by whom he was munificently rewarded, and in addition he was a popular favourite for more than half a century, though possessing none of the qualities of art which would have rendered him deserving of his reputation. Annibal Carracci and Michelangelo Caravaggio, strove in vain to turn the current of public favour, and the partisans of Cesari and Caravaggio were called *Idealisti* and *Naturalisti*. Cesari died at Rome in 1640, and left a numerous school of imitators behind him; but there was not a single painter of ability among his scholars.

The works of Cesari, in fresco and in oil, are numerous. The chief of them is the series in illustration of Roman history in the Conservatorio in the Capitol. They are executed with great spirit, but with an utter disregard of nature; the design is slight and incorrect; the extremities have little variety, and are merely indicated; the draperies also are undefined, the heads want character, and the colouring is flat.

CESARO'TTI, MELCHIORRE, was born at Padua in May 1730, and studied in the seminary of that city. In 1762, becoming acquainted with Ossian's poems, he was so struck by their peculiarity and the novelty of the style, that he resolved on translating Ossian into Italian blank verse. He dedicated his translation to the Earl of Bute, who caused an elegant edition of it to be printed at his own expense at Padua, 2 vols. 8vo., 1763, and made a present of it to the author. The translation is a fine specimen of Italian versification, being harmonious and fluent, and in many parts highly poetical. He broke through the tameness into which Italian poetry had sunk for more than a century before him, and gave the example of a new style and a bolder flight of imagination. Cesarotti however was not of a mind likely to be restrained within rational bounds. His language is full of neologisms, and he had the hardihood to assert his preference of Ossian's poems to those of Homer. He attempted a version, or, as he called it, a reform of the Iliad, which he styled 'La Morte di Ettore,' in which he took such liberties with his text, that it may be considered as a parody rather than a translation. His 'Saggio della Filosofia delle Lingue applicata alla Lingua Italiana,' Padua, 1785, is perhaps his best critical and philosophical work, though it occasioned considerable controversy. In 1807 Cesarotti went to Milan to deprecate the wrath of Napoleon against his countrymen of Padua. Napoleon, who was a great admirer of Cesarotti's Ossian, received him in a very friendly manner, made him a knight of the iron crown, and bestowed a pension upon him. Cesarotti in return set about writing the praises of his patron in a poetical composition, which he styled 'Pronea,' a work now only remembered among the many specimens of the flattery and servility of the Italian literary men in Napoleon's time.

Cesarotti died on November 4, 1808. He translated several orations of Demosthenes, Isocrates, Æschines, Lysias, and other Greek writers, and also Juvenal. His essays and dissertations are numerous. His works were collected and published in 42 vols. 8vo., Pisa, 1809. The editors of the 'Classici Italiani' published a selection of them in 4 vols. 8vo., Milan, 1830.

CE'SPEDES, PABLO DE, painter, sculptor, and architect, the most learned artist and one of the most distinguished men of Spain, was born at Cordova in 1538. After studying at Cordova and at Alcalá de Henares, he went to Rome, where he distinguished himself during the pontificate of Gregory XIII. by some frescoes in the churches of Araceli and Trinità de' Monti. Having been appointed to a vacant canonry in the cathedral, he returned to Cordova in 1577, and in 1604 he published 'De la Comparacion de la Antigua y Moderna Pintura y Escultura.' He died at Cordova in 1608.

Céspedes wrote a history of the cathedral of Cordova, and some other works. Pacheco describes Céspedes as one of the greatest of the Spanish colourists, and the first master of chiaroscuro in the school of Seville. There are several of his works in the cathedrals of Seville and Cordova, and in the academy of San Fernando at Madrid.

(Cean Bermudez, *Diccionario Historico*, &c.)

CE'SSIO BONO'RUM, in the law of Scotland, is the name given to a process by which, as by the insolvency system in England, the estate of an insolvent person who does not come within the operation of mercantile bankruptcy is attached and distributed among his creditors. The term is

derived from the deed of cession, or the assignment by which, as the counterpart of the relief afforded to him from the immediate operations of his creditors, the insolvent conveys his whole property for their behoof. Both the nomenclature and the early practice of the system are taken from the Roman law. ('Dig.' 42, tit. 3, 'De Cessione Bonorum.') By 6 & 7 Will. IV. c. 56, the system was remodelled. The process may now be sued out either in the Court of Session or in the sheriff's local court. It may be taken advantage of by any person who is in prison for civil debt, or against whom such a writ of imprisonment has issued. It proceeds on notice to the creditors, and an examination and surrender of the insolvent. Proceedings instituted in the Sheriff's Court are liable to review in the Court of Session. Cessio Bonorum exhibits, like the insolvency system in England, this important difference from mercantile bankruptcy, that the person who obtains the privilege is not discharged from his debts, but only from proceedings against his person for payment of past debts.

CESSION. When an ecclesiastical person accepts a second benefice or dignity in the church, which is incompatible by law with that which he previously held, the latter is said to be void by cession. This avoidance takes place upon the acceptance of the second benefice.

CESTRA'CEÆ, or CESTRI'NÆ, a natural order of plants belonging to the class of monopetalous Exogens. The type of the order is the genus *Cestrum*. *C. venenatum* is a large woody bush, which grows at the Cape of Good Hope, in Houtinqua Land, and elsewhere. A decoction of the bark reduced to an extract by evaporation is employed by the Hottentots to poison their arrows. *C. macrophyllum* and *C. noctuum* have similar properties. *C. hediunda* and *C. lamifolium* are febrifuge, and are applied extensively as astringents in Peru. About fifty species of Cestrum have been described. They are all of them natives of North and South America, and the West India Islands, and are known by the common name of Bastard Jasmines. They are easily cultivated, and will grow in any rich soil.

CESTUI QUE TRUST. [TRUST AND TRUSTEE.]

CETACEA. [WHALES.]

CETINE, the cystallisable matter which forms the greater part of the substance called spermaceti. It is white, crystalline, soft to the touch, and friable; it is nearly inodorous, and tasteless; it fuses at 120° Fahr. It consists of—carbon, 82.660; hydrogen, 12.862; oxygen, 4.478.

CETIOSA'URUS, a new genus of large fossil Saurians adopted by Professor Owen. It occurs in the Oolitic formations.

CETONI'ADÆ (Mac Leay), a family of coleopterous insects of the section *Melitophili* (Latreille). The *Cetoniadæ* form one of the most extensive groups of the beetle tribe, and nothing can exceed the brilliant colours with which many of them are adorned; in this respect vying with, if not surpassing, the *Bupestridæ*. In the larva and imago state these insects feed upon vegetable substances. The larva, when about to assume the pupa state, incloses itself in a cocoon made of particles of earth or rotten wood, fastened together by means of a glutinous secretion. A well-known example of this group is the beautiful bright-green Rose Beetle, *Cetonia aurata*.

CETRA'RIA ISLANDICA. This lichen, commonly termed *Iceland Moss*, though a native of the higher mountains of the northern part of Britain, is procured mostly from Norway and Iceland, on the lava of the west coast of which latter country it abounds and attains a large size. It is imported through Hamburg. When dry, it has scarcely any odour, and the taste is bitter and unpleasant. The powder or flower is of a whitish gray. The analysis of Berzelius gives as its constituents—starchy matter of a peculiar kind (*lichenin*), 44.6; bitter principle (*cetrarin*), 3.0; uncrystallised sugar, 3.6; chlorophylle, 1.6; extractive matter, 7.0; gum, 3.7; bi-lichenates of potass and lime, along with phosphate of lime, 1.9; amylaceous fibrin, 36.2.

When the bitter principle is removed, the starchy matter differs from wheat-flour in nutritive properties, though Olasson asserts that a soup prepared with it is twice as nutritious as one made with flour. (Sparmann, 'Voyage,' iii. p. 129, note.) Certain it is that the inhabitants of Norway, Lapland, and, above all, of Iceland, use it extensively as an alimentary substance, the latter regarding it as the gift of 'a bountiful Providence, which sends them bread out of the very stones.' Dr. Henderson ('Tour in Iceland') says that a porridge made of this lichen-flour is to a foreigner not only the most wholesome but the most palatable of all the articles of Icelandic diet. It is submitted to no other preparation than repeated steepings in cold water, drying, and powdering; after which it is either made into cakes or boiled in milk. Unless it be steeped, it is both offensively bitter, and also to many persons purgative; hence it has been called *Lichen catharticus*. Owing to its intensely bitter taste, Sir John Franklin, even when pressed by hunger, could not use it, though the Tripe de Roche suited him well. ('First Journey to Shores of Polar Sea,' 4to., p. 412, 414.)

The excellence of Iceland Moss depends upon its freshness and freedom from accidental impurities, which should be carefully removed before it is used. In its natural state, *viz.* still containing the bitter principle, it is tonic, stomachic, febrifuge, demulcent, and nutritious. It has acquired a high reputation, not merely as an article of diet, but as a medicinal agent in consumption. It has however no claims to confidence in that frightful disease.

CETTE, a flourishing sea-port town in the department of Hérault, in France, is built on the slope and at the foot of a hill (the ancient *Mons Setius*), on a tongue of land between the Etang de-Thau and the Mediterranean, which are united by a canal that runs through the town and terminates in the harbour. It stands in 43° 24′ N. lat., 3° 42′ E. long., at a distance of 422 miles S. from Paris, and has a population of 13,413. The town owes its rise to the mole which was commenced in 1666, and which, extending 656 yards into the sea, shelters the harbour from the

south and south-east winds. The depth of water within the harbour is 19 feet, and there is room enough for 400 vessels. The entrance is defended by a citadel and by two forts. The town, which is entered by a causeway raised above the Etang-de-Thau, and by a bridge of 52 arches, is well built, has tribunals of first instance and of commerce, a college, a public library, marine baths, a customs entrepôt, ship-building yards, and large salt works. The church of St.-Louis is the most remarkable building. Handsome quays extend along the banks of the canal. The importance of Cette is owing to its being an outlet in the centre of the great wine districts of the south of France, and to its communication with Bordeaux by the Canal du Midi (which enters the Etang-de-Thau at Agde, and may be said to enter the Mediterranean through the harbour of Cette), with Lyon by the Canal des Etangs, the Canal de Beaucaire, and the Rhone, and with Nimes and Montpellier by railroad. The foreign commerce and the coasting trade of Cette are important and active; and it has extensive cod and oyster fisheries. The imports consist of wool, raw cotton, corn, oil, cork, colonial produce, hemp, timber, pitch, tar, iron, tallow, fish-oil, &c. The manufactured articles are verdigris, green soap, brandy, sugar, perfumes, corks, liqueurs, confectionary, great numbers of wine casks, &c. The exports consist of these articles, and of wine to the amount of about 40,000 tons annually, besides almonds, dried fruits, dye stuffs, and flour.

(*Dictionnaire de la France;* Macgregor's *Statistics.*)

CETUS, the *Sea-Monster*, called Pistrix by Hyginus, and Orphus by some of the Greeks, is said to represent the monster which is going to devour Andrómeda. It is situated below Pisces and Aries, and a bright star in the head, called Menkar (*α* Ceti), comes on the meridian at eight o'clock in the beginning of January. It is usually drawn with a fish's head, two paws in front, and a curled fish's tail.

CEULEN, or KEULEN, VAN. [VAN CEULEN.]

CE'UTA, a town and fortress belonging to the Spaniards on the north coast of Africa, at the eastern entrance of the Straits of Gibraltar, where a small peninsula, about 3 miles in length, juts out in a N.N.E. direction exactly opposite Gibraltar. The peninsula, which terminates in the Monte del Hacho, the ancient *A'byla*, is joined to the main land of Africa by a narrow isthmus, on which the town is built. Ceuta is the seat of a bishop and of a governor, who has under him the other *presidios* or forts held by Spain on this coast, namely, Penon de Velez, Alhuçema, and Melilla, the latter of which is about 150 miles east of Ceuta, and has a good harbour.

CEUTORHYN'CHUS, a genus of coleopterous insects of the family *Curculionidæ* (Leach). The insects which compose this genus are very numerous, and of small size, some being scarcely larger than a mustard-seed. They frequent plants of various sorts.

CEVADIC ACID, obtained from cevadilla, the seed of the *Veratrum sabadilla*, has the form of white pearly needles, which fuse at 67° Fahr. and dissolve in water, alcohol, and æther. Its salts are little known.

CEVADI'LLA, SEBADILLA, or SABADILLA, is the Spanish-Mexican name for a species of Helonias, the seeds of which have become an article of considerable importance, in consequence of their having been found to contain a considerable quantity of Veratria. The species of Helonias producing the Cevadilla is the *H. officinale* of Schlechtendahl and Chamisso. Other species, as *Veratrum sabadilla* and *H. frigidum*, are also said to contain Veratria, and to be sold in the market as Cevadilla. They are all Mexican plants.

CE'VENNES, a chain of mountains which runs through France, connecting the Vosges Mountains with the Pyrenees. Cæsar calls it Cevenna ('Bel. Gal.,' vii. 8). From Mont-Louis a summit of the Pyrenees in the department of Pyrenées Orientales in France, a mountain range runs N. by W. through the department of Aude, separating the feeders of the Ariège, an Atlantic river, from those of the Aude, a tributary of the Mediterranean, and dips into the high plain a little west of Castelnaudary, near the summit level of the Canal du Midi. [AUDE.] Immediately E. of Castelnaudary the Lower Cévennes Mountains commence under the name of Montagne Noire, and run N.E. through the departments of Hérault and Gard, sending forth numerous offshoots into those of Tarn and Aveyron, and dividing the basin of the Tarn from that of the Hérault. On leaving Gard, the chain increases in height, and running N.E. by N. enters the department of Lozère, where one of its summits, Mont-Lozère, attains the height of 4890 feet. From this point a ridge called La Margeride springs off towards the north-west, and unites the Upper Cévennes with the mountains of Auvergne. The Margeride Mountains divide the waters of the Tarn from those of the Allier; they attain the height of 4987 feet, and send out, amongst other branches, those of Levezou and Aubrac, which extend into Aveyron. [AVEYRON.] Continuing in the same direction, the Cévennes cover nearly the whole of the department of Ardèche, from the south-west of which a ridge runs northwards through Haute-Loire, and divides the basin of the Allier from that of the Loire, while the main chain is the water-shed between the Loire and the Rhône. In the department of Ardèche the Cévennes Mountains reach their culminating point in Mont Mézenc, which has an elevation of 6561 feet. [ARDECHE.] Leaving Ardèche, the chain enters the eastern part of Haute-Loire, and, taking a northern direction, passes through the departments of Loire, Rhône, Saône-et-Loire, and Cote-d'Or, where it meets a branch of the Vosges Mountains, and separates the feeders of the Seine and the Loire from those of the Saône. Thus throughout its whole length the Cévennes Mountains form the water shed between the Atlantic and the Mediterranean. The eastern side of the chain has the most rapid descent; the western sinks gradually into the great plains of the south-west and the centre of France.

The whole length of the chain, as here esti-

mated, is about 250 miles. It consists principally of granite; but basalt, lava-streams, extinct craters, and other evidences of volcanic action at some remote period abound in part of the chain. [ARDECHE; AVEYRON.] Gold dust is found in the granite deposits after inundations to which most of the rivers of the Upper Cévennes are subject. In some parts the rocks are calcareous, and contain grottoes and caverns of great extent. In the calcareous districts the disappearance of a river (locally called an *aven*) for 1 or 2 miles is not uncommon. Talc and slate-clay are found throughout the whole chain, while towards the base considerable beds of roofing slates are found. The Cévennes afford abundant pasture for large numbers of cattle and sheep, and in some parts the higher summits are covered with forests of pine; chestnuts also are produced in immense quantities, and form an important article of food and of commerce. On the lower slopes the vine and other fruit trees flourish. Game is abundant, and wolves are far from being rare. Iron, lead, antimony, copper, coal, plaster of Paris, and marble are met with in various parts of the chain.

Cévennes is also the name of the country extending about the Upper Cévennes, and including the districts of VIVARAIS, VELAY, and GEVAUDUN.

CEYLON, an island which lies between 5° 54′ and 9° 50′ N. lat., and 79° 50′ and 82° 10′ E. long. It is separated on the north-west from the continent of India by the Gulf of Manaar. Its extreme length is about 270 miles from north to south, and its extreme breadth 145 miles. The circuit is about 750 miles. Its area is about 24,664 square miles.

Coast, Mountains, Rivers, &c.—The eastern shore is in many parts bold and rocky, and the water deep. The north-west and west shore from Point Pedro to Colombo is uniformly low, and indented with bays and inlets: the south and south-eastern shore is elevated, and presents a highly picturesque appearance. The north-west coast of Ceylon is almost joined to India by the island of Manaar, Adam's Bridge, and the island of Ramisseram. The difficulties of the navigation of this strait are explained under ADAM'S BRIDGE: the deepening of the two channels (the Manaar Passage and the Paumban Passage) has often engaged the attention of the Ceylon government.

The physical structure of the interior of Ceylon is not yet well known. The great mass of the high land is in the southern and wider part of the island, and the central parts of this mountain region seem to be intersected by the seventh parallel of N. lat. Numerous offsets from this nucleus are detached towards the south, south-east, and south-west coast, forming the boundaries between valleys that are drained by rivers rising in the central mass. From this mass a range of high land runs due north, probably nearly as far as 9° N. lat., forming the western boundary of the basin of the Mahawelli Ganga (the chief river of the island), and separating the waters which flow into this river, or towards the east coast, from those which run westward into the Gulf of Manaar. The north, north-east, and the north-west parts of the island are generally flat. The mountain called Adam's Peak is 7420 feet high; three others exceed it in elevation; and ten others are from 3000 to 7000 feet high each.

The island abounds with mountain streams and rivers. The rivers are more numerous on the south and south-west than on the north-east side. Those which flow through the districts on the east and north formerly filled the numerous tanks which rendered those districts the most fertile and populous in the island. These districts, now deserted and overgrown with jungle, contain remains of numerous works for conducting and distributing the waters. The principal rivers are the Mahawelli Ganga (the Ganges of Ptolemy), the Kalani Ganga, the Kalu Ganga, and the Walawe Gange, all of which rise in the central mass. The Mahawelli Ganga, after a course of about 200 miles, falls into the Bay of Trincomalee. All four are navigable only for boats and rafts. There are lagunes near Negombo and Colombo, and at a few other spots. Artificial lakes and canals, for the purpose of irrigation, have been formed by the Singhalese at a very remote period. There is one canal for traffic, between Colombo and Calpentyn. The flatness of the districts bordering on the sea-coast has occasioned the formation of extensive salt-water lakes, or lagunes, which, by means of the channels connecting them, facilitate the intercourse of the maritime districts.

The intercourse between Colombo and Galle and the continent is impeded, during the south-west monsoon, by the boisterous navigation of the Gulf of Manaar, and the dangers of the coast. This circumstance led to the formation of the canal which connects the lakes and rivers between Calpentyn and Colombo. Calpentyn is accessible to vessels during the south-west monsoon; and their cargoes are conveyed thence in boats. The country being intersected by deep ravines, often impassable, and covered with thick jungle, the communications are rendered extremely difficult. Under the Candian government the opening of roads was prohibited, and the passes were strictly guarded. Narrow paths were made, by which men on foot could pass singly, climbing over the rocks and through the thickets. But, since the occupation of the country by the British, carriage roads have been constructed at a vast expense, and with very great advantage to the colony.

Climate, Soil, Productions.—The climate of Ceylon is principally influenced by the two monsoons, of which the N.E. prevails from November to February, and the S.W. from April to September. In the intervening months variable winds and calms prevail. The seasons are, however, subject to fluctuation, the south-west wind being generally more prevalent. Sometimes indeed at Colombo this wind blows for five months together, and the north-west wind blows during the months of December and January only. Local circumstances modify the winds of the interior according to the distance from the east and west coast. The heat is not so great as on the neighbouring coast of India, the sea-breezes moderating the temperature, and making the air more agreeable and salubrious. The rains are sometimes

very heavy. The eastern part of the island may be characterised as hot and dry; the western as temperate and humid. A few years ago, from the mortality among British troops who had seen hard service, it was thought that Ceylon was an insalubrious island; but a better knowledge of the country has led to a more favourable opinion.

A few species of primitive rock in numerous varieties constitute the principal geological formations of the island. The varieties of granite and gneiss, which often pass into each other, are very numerous. Regular granite is not common; but it is met with at Point de Galle. Gneiss is far more abundant than granite; a beautiful kind is found at Amanapoora, which contains a very large proportion of felspar. At Trincomalee quartz occurs in veins and in masses, embedded in granite. Hornblende and primitive greenstone are found on Adam's Peak. Dolomite is found only in the interior, and is used for making lime. It is in this rock that the nitre caves are found. The only recent rocks occur in the level belt near the sea. Fine-grained compact limestone is found in great abundance on the northern extremity of the island. Along the remainder of the coast sandstone generally prevails, lying in horizontal beds along the beach, but seldom extending beyond it. Among the minerals of the island are iron, manganese, plumbago, nitre, alum, salt, and gems. There are several hot springs in the island.

Quartzose gravel or sand, and felspathic clay, mixed with oxide of iron, derived entirely from the decomposition of the prevailing rocks, generally compose the soil of Ceylon. The natural soils seldom contain more than three per cent. of vegetable matter, while quartz often constitutes nine-tenths of the whole. The soil near the coast from Negombo to Tangalle is favourable to the growth of cocoa-nuts and cinnamon. In various parts of the island favourable spots occur adapted to the growth of coffee and tobacco. The soil of the northern division is sandy and calcareous, and is artificially irrigated and well tilled by the Malabars. Rice and cotton thrive in the districts near Jaffna. On various parts of the coast are valuable salt-farms.

The ancient inhabitants appear to have been skilful in the execution of works for the collection and distribution of water, the most remarkable of which are the spacious tanks excavated in the plains, and the dams constructed across the beds of rivers, or over ravines and valleys, connecting small hills, and forming extensive lakes for flooding the plains in the driest season. Among these works are the Lakes of Kandelay and Minery, and the Giant's Tank. The Lake of Minery is said to have been formed three centuries before the Christian æra. They were executed for the improvement of lands which were probably distributed among the people employed in the work, who dedicated a portion of their revenues to the temples and priesthood. In the low grounds the rice-fields are irrigated by rivers and tanks; in the higher grounds, by mountain streams.

The cocoa-nut tree is the most valuable vegetable product of the island. The leaves are used for thatch, brooms, torches, and food for elephants; the sap yields the beverage called *toddy*, from which the spirit called *arrack* is obtained by distillation, and sugar by boiling; the kernel yields oil; the refuse oil-cake feeds pigs and poultry; the shells form implements and vessels; and the capsule affords fibres for cordage. The Palmyra palm is nearly as useful to the natives as the cocoa-nut tree. The kittul-tree, the talipot tree, the areca-nut tree, timber trees, and cabinet-wood trees, are in abundance. Cinnamon is one of the most valuable products of the island. Coffee thrives well; as do likewise tobacco, indigo, and rice. Among other vegetable produce may be named the Chaya dye-root, pepper, cardamoms, fruits, and culinary vegetables.

The quadrupeds of Ceylon are for the most part like those of the opposite continent. Elephants are most numerous in the northern and eastern provinces: one European officer, in two years, killed four hundred. They often make predatory incursions in troops, and do great injury to the crops. Under the Candian government the people were sometimes called forth in thousands to take the elephants in crawls, or inclosures formed of strong stakes and trunks of trees. The elk, the fallow-deer, the moose-deer, the hog, a small species of bear, and snakes are among the animals of Ceylon.

The pearl fishery is a remarkable feature in the industry of Ceylon. The chief pearl-banks are at Condachy, and measure about 30 miles by 20. There are from one to two thousand divers employed for about three weeks in spring. The pearls obtained are sold to the highest bidder, and the diver has a certain share of the profits, which often amounts to eight or ten times as much as he can earn by ordinary labour.

History and Government. — Onesicritus and Nearchus, commanders of the fleet despatched by Alexander from the Indus to the Persian Gulf, brought the first accounts of the island to Europe. Through a diplomatic mission which came to Rome from Ceylon in the time of Claudius, particulars were ascertained respecting its towns, population, and extensive trade, from which it appeared that the island was in a very prosperous and highly civilised state. It was visited by merchants in the 6th century, by Marco Polo in the 13th, and by Sir John Mandeville in the 14th.

The Singhalese annals extant contain an uninterrupted historical record of events for 24 centuries, according to which their first king Hijaya founded his kingdom by the extirpation of the original inhabitants about 543 B.C., and their last king, Shri Wikrama Raja Singha, was deposed by the British in 1798 A.D. Evidence of the authenticity and accuracy of these writings has lately given a new value to them. Many of their descriptions of towns and buildings, and other works of art, have been tested by an inspection of the now existing ruins, and the evidence thence drawn has been confirmed by deciphered ancient inscriptions.

Of European nations the Portuguese first established a regular intercourse with Ceylon. The island being torn by internal wars, and invaded

from Arabia and Malabar, the king purchased the assistance of the Portuguese with a stipulated annual tribute of 250,000 lbs. of cinnamon. The allies gradually gaining a footing in the island, at length, in 1520, strongly fortified themselves at Colombo, subjected the whole of the maritime districts, and retained possession of them for about 150 years. The Dutch aided the Candians to expel the Portuguese in the middle of the 17th century, and then gradually aimed at acquiring the whole island. At the close of the 18th century, after various encounters between the British, the Dutch, and the French, the British obtained possession of much of the coast; and in 1815, at the invitation of the chiefs, who were disgusted with the tyranny of their king, the British took possession of the whole island.

Under the native king, the government of Ceylon was strictly monarchical. The king was proprietor of the soil, regulator of the feudal payments and services, and distributor of all public honours and emoluments. The services of all were rewarded with certain privileges or possessions. The head man of each village, to whom the people immediately referred, directed the labour of the people under the authority of the provincial chief, and superintended the police. But the superintendence of agriculture was the duty of a particular class of persons, who attended to the embankments of tanks and canals, and to the distribution of water.

The ancient kings had certain monopolies of cinnamon and other produce, which the Portuguese and the Dutch maintained with such severity as to press sorely on the labouring classes. The British gradually removed all these monopolies, and by the year 1832 the labourers were enabled to apply their industry in new fields. Various improvements, moral, political, and commercial, have been introduced, which have raised the Singhalese to a far happier position than they had occupied during the previous three centuries.

The government is at present carried on by a governor and two councils—executive and legislative. The executive council consists of a president, who is the governor, and of five other members. The legislative council consists of a president, who is the governor, and of eight other official members. With the latter council are now associated six unofficial members, natives or naturalised subjects of Ceylon, being chief landed proprietors, or principal merchants. Soon after the island came into the hands of the British, young men were sent out as 'writers,' to fill by seniority the various civil offices in the island. Lord Stanley in 1845 completed a series of changes, by which some of the official appointments might be open to natives of the island; and a rearrangement of duties, salaries, and pensions was made.

The island is divided into *provinces*, and these into *districts*, each of which is provided with an agent and assistants. There are a supreme court, a vice-admiralty court, provincial courts, and magistracies for the administration of justice. The ecclesiastical establishment consists of a bishop (first appointed in 1846), an archdeacon, several clergymen of the Church of England, and ministers of other denominations. In 1842 the sums appropriated to religious purposes, out of the revenues of the colony, comprised 2000*l.* to the archdeacon, other salaries raising the amount to 7973*l.*, 2919*l.* voted for new churches in Colombo and Candy, 1157*l.* to the Scotch Kirk, 944*l.* to Dutch and Lutherans, 160*l.* to Wesleyans, 100*l.* to Roman Catholics; total 10,334*l.* There are a vaccine establishment, a savings' bank, and a regular police establishment, modelled on that of London. The revenue of the colony amounted, in 1844, to 442,000*l.*; in 1845, to 452,000*l.* The expenditure amounted, in 1844, to 374,000*l.*; in 1845, to 450,000*l.*

Population, Education, Language, &c.—For the progress of education the island is principally indebted to religious societies and the exertions of missionaries. The great desire of the natives to acquire the English language has led to a modification of the course of instruction. Instead of their knowledge being limited to a few translations in an imperfect language, other works of a more useful kind have been introduced. A very creditable work in the English language, a gazetteer of the island, has been published by a native, and numerous others have acquired an extensive acquaintance with the learning of Europe. In 1842 there were in the island 39 government schools, with 60 masters and assistants. The grants for their support, from the colonial revenues amounted to 4136*l.*, besides 500*l.* voted towards the Wesleyan Mission for education. There were 2129 scholars in the government schools, 20 in the orphan school, 354 in the regimental schools, 13,343 in free schools, and 4857 in native schools, making a total of 20,703 scholars.

The first colonisation of Ceylon is involved in obscurity. If the original inhabitants differed from the Hindoo races, they have been either extirpated or so amalgamated as to be no longer distinguishable from them. The population is at present composed of Singhalese, Malabars, Mohammedans, a small proportion of Europeans and their descendants, and negroes.

The *Singhalese* inhabit the interior and parts of the coast, and comprise the great body of the people. The civil distinctions of caste are strictly observed, but the religious distinctions have been abolished. The higher orders have a proud and lofty idea of their importance, and carefully abstain from intermarriage with lower castes. The Singhalese are characterised as honest, sober, polite, obedient, and affectionate. A small class or tribe called Veddas, inhabiting secluded parts of the interior, are very little better than savages in their social state. The *Malabars*, who occupy the north and north-east parts of the island, are descendants of those natives of India who invaded the country many years ago: they resemble in many points the Malabars of Southern India, but are rapidly acquiring European habits. The *Mohammedans* are descendants of those who have arrived from neighbouring islands and states; they engross a large proportion of the commerce and traffic of the island. The *Europeans* and the *Negroes* are comparatively small in number.

Christianity is supposed to have been introduced into Ceylon by Nestorian missionaries in the sixth century. It afterwards became blotted out, and was reintroduced by St. Francis Xavier in the 16th century. At the present time the denominations of Christians include Roman Catholics, Episcopalians, Presbyterians, Lutherans, Methodists, and Baptists. The Buddhist religion remains in force among the native Singhalese. In some parts the Hindoo rites of Siva are followed. The Singhalese language is peculiar to Ceylon; but their classic and sacred writings are either in Pali or in Sanscrit. The Malabars use the Tamul. Both Singhalese and Malabars have many historical and sacred books in their respective languages.

The population is supposed at one time to have been much more numerous than at present. In 1842 it amounted to—

Coloured . . .	1,329,529
White . . .	35,010
Total . . .	1,364,539

Trade and Commerce.—We have historical proof that, from the Christian æra until the beginning of the 6th century, Ceylon was the emporium of the trade carried on between Africa, India, and China. The Romans, particularly after the discovery of the passage by way of Babelmandeb to Guzerat, by Hippalus, until the decay of their empire, traded extensively with India and Ceylon, the latter place being the usual limit of their navigation, where they exchanged their gold and silver, the chief instruments of their commerce, for the silks, fine cloths, and costly commodities of Eastern India and China. The Persians and the Mohammedan Arabs, in later times, conducted an extensive commerce with Ceylon. The miserable spirit of monopoly which characterised the Portuguese and Dutch occupation of Ceylon greatly injured the commercial development of the island, and it has required liberal and long continued exertions on the part of the British to put it in a fair road to prosperity.

In 1842 there were in the colony 3663 looms, 281 oil mills, and 1 sugar mill. The looms were employed for weaving handkerchiefs, table-cloths, napkins, towels, and sail-cloth. There were 13 mines of plumbago; 4286 boats and rafts were engaged in fisheries. Of the whole surface of the island, 760,821 acres were under crop (of which 330,810 were pasture), and 4,882,298 were uncultivated. The live stock in the island comprised 2094 horses, 507,704 cattle, 50,898 sheep, and 35,779 goats. The largest articles of produce in that year were:—paddy, 6,717,990 bushels; fine grain, 729,216 bushels; coffee, 1,254,263 lbs.; tobacco, 31,352,408 lbs.

The number of ships which entered Ceylon in 1842 from Great Britain was 31 (10,959 tons); those which left Ceylon for Great Britain were 31 (9666 tons). The exports from Ceylon in 1843 were valued at 422,424*l.*, of which 330,184*l.* was to Great Britain. The chief articles were cinnamon, 1,082,883 lbs.; coffee, 10,622,805 lbs.; cocoanut oil, 800,000 gallons; tobacco, 1,624,350 lbs. The imports in the same year amounted to 1,029,515*l.*, of which those from Great Britain were 257,508*l.* The chief articles were grain and meal from the continent of India; cottons, machinery, hardware, wine, and beer and ale, from Great Britain.

An important arrangement for Ceylon is that which makes it a central point for the Oriental Mail Packets. A mail which leaves Southampton every month, viâ Alexandria and the Red Sea, stops at Ceylon, whence two branch mails issue, one to Madras and Calcutta, the other to Penang, Singapore, and Hong Kong; and it is probable that another branch mail to Australia, Van Diemen's Land, and New Zealand, will be made part of this monthly system—all conducted by steam navigation.

(Strabo, book xv.; Pliny, *Nat. Hist.*, vi. 22; Ptolemy, book viii.; Knox; Bertolani; Campbell; Ceylon *Almanac and Gazetteer;* Colombo *Journal; Parliamentary Papers.*)

CE'YX. [KINGFISHERS.]

CHABEUIL. [DRÔME.]

CHABLAIS. [SAVOIS.]

CHABLIS. [YONNE.]

CHA'BRIAS, an Athenian general, who, in B.C. 388, sailed to Cyprus to assist Evágoras in the reduction of the island, of which his father had been deprived by the Persians. In B.C. 376 he gained the sea-battle at Naxos. In 373 he and Callistratus acted as colleagues of Iphicrates at Coragra. He was despatched to settle the affairs of Thrace in 360. In 357 Chabrias and Chares were sent from Athens with an army to besiege Chios, which, with Rhodes, Cos, and Byzantium, had revolted. Chares led the land forces, and attacked the walls from shore. Chabrias no sooner approached the harbour than he engaged in a desperate sea-fight; his ship was shattered by the enemy, most of his men escaped, but the general himself, preferring, as Diodorus says, a glorious death to a disgraceful surrender, fell fighting. (Diod. Sic. xvi. 7; Corn. Nep., c. 4.)

CHACMA. [BABOON.]

CHÆRONE'A, an old city of Bœotia, on the borders of Phocis, near the pass which led to Delphi by Panopeus and Parnassus. It is celebrated for two battles fought here: one in which Philip of Macedon defeated the united forces of Athens and Thebes; the other between Sulla and Archelaus, the general of Mithridates, in which the Romans gained a decisive victory, B.C. 86. Pausanias says (ix. 41) that the inhabitants derived a great profit from the cultivation of the olive and the manufacture of perfumes from flowers. The site is now occupied by the town of Caprena (Walp. 'Mem.,' p. 342), or Capurno (Dodwell, i. p. 221), where there are remains of a theatre and other buildings. According to Gell's 'Itinerary' (p. 222), the town lies about an hour's ride south of the Cephisus. It was the birth-place of Plutarch.

CHÆROPHYLLUM, a genus of plants belonging to the natural order *Umbelliferæ. C. sylvestre* is the garden Chervil of Great Britain, which is sometimes used as a pot-herb.

CHÆTODON, a genus of fishes of the section *Acanthopterygii*, and family *Squamipennes*

(Cuv.). In these fishes the body is compressed; the mouth small, and furnished with several closely set rows of long slender bristle-like teeth. The scales extend from the body on to the dorsal and anal fins, so that it is difficult to distinguish the line of commencement of these organs.

These fishes abound in the seas of hot climates, frequent rocky shores, and are adorned with beautiful colours. Their most common tints appear to be black and yellow, but brilliant metallic blues and greens of various tints are not unfrequent. Many of the species have a vertical black band in which the eye is placed. In some there are several similar bands on the body; in others the body is spotted, or adorned with oblique or longitudinal bands. They have a large air-bladder; the cæca are numerous, long, and slender. The flesh of these fishes is accounted excellent. The species are very numerous, and mostly frequent the Indian seas; some are found both in the Atlantic and Pacific Oceans, and some are peculiar to the seas of America.

Cuvier subdivides the genus Chætodon, *into Chætodon proper, Chelmon, Heniochus, Ephippus, Holocanthus, Pomacanthus* (American), and *Piatax*. It is to the sub-genus *Chelmon* that the *Chætodon rostratus* belongs. This species inhabits the fresh waters of India, and feeds upon insects, procuring them in a very singular manner. When it observes a fly or any other insect on a weed, or hovering over the water, it approaches it within five or six inches, and then ejects through its tubular snout a little water with such precision as to bring down its victim, which it immediately devours. This fish is frequently kept in Java for the entertainment afforded by its dexterity in shooting flies.

Another species, the *Platax vespertilio*, a native of the coast of Ceylon, is remarkable for the wing-like form and expansion of the dorsal and anal fins, and the extreme flatness of the body.

(Bennett's *Fishes of Ceylon*, a work illustrated with beautiful coloured plates; Cuvier's *Règne Animal;* Lacépède, *Hist. Nat. des Poissons;* Block, *Hist. Nat. Générale et Particulière des Poissons.*)

CHAFFINCH (*Fringilla cælebs*). This bird is the *Spiza* of the Greeks, *Franquello, Franqueglio, Fringuello*, and *Spincione* of the Italians; *Pinson, Pinçon, Grinson*, and *Quinson* of the French; *Fink, Buch-Fink, Edel-Fink, Gemeine Fink, Schild-Fink* of the Germans; *Fincke* and *Bofincke* of the Fauna Suecica.

This well-known bird is much esteemed in Germany for its song. Indeed, according to Bechstein, the passion for this finch is carried to such an extent in Thuringia, that some men have gone ninety miles from home to take with bird-lime one of those birds distinguished by its song, and have given one of their cows for a fine songster; whence has arisen their common expression, 'such a chaffinch is worth a cow.' A common workman will give a louis d'or (sixteen shillings) for a chaffinch he admires, and willingly live on bread and water to gain the money. An amateur cannot hear one that sings in a superior style 'the double trill of the Hartz,' without being in an ecstasy. The Germans distinguish the song of the chaffinch into different styles or kinds, to which they have given definite titles:—

The following chaffinch songs, or melodies, are most esteemed in Saxony and Hesse. Some are heard in the woods, but they are rarely sung with a clear and strong voice. If the bird executes well, and adds to the last strain the sound '*fink*,' which the German bird-catchers translate by *amen*, it is of the highest value. 'No price,' says Bechstein, 'will be taken for it.'

1. The 'Double Trill of the Hartz,' in Lower Saxony. 2. The 'Reiter Zong,' or 'Rider's Pull,' first heard among the mineral mountains of Saxony and Voigtland. 3. The 'Wine Song,' with the following subdivisions, viz., the 'Fine,' or 'Längsfeld Wine Song;' the 'Bad Wine Song,' and the 'Sharp Wine Song,' which is subdivided into the 'Common Sharp,' and the 'Ruhl Sharp.' 4. The 'Bräutigam,' or 'Bridegroom Song,' also divided into good and bad.' 5. The 'Double Trill.' One of these, the 'Drouble Trill' of Iamblach, is only to be acquired in the house, and is so deep and powerful, that it can scarcely be conceived how the larynx of so small a bird can produce such sounds. Bechstein, who makes this observation, adds, that a chaffinch which sings this, either alone or with the good 'Bridegroom's Song' (such as are educated at Iamblach), sells at Waltershausen for 18 French francs. 6. The 'Gutjhar,' or 'Good Year Song,' with two subdivisions. Chaffinches singing this, united to the 'Wine Song' of Ruhl, or the 'Sharp Song,' had become very rare when Bechstein wrote, and fetched high prices. 7. The 'Quakin Song,' formerly much admired. Bechstein says, 'I believe I possess the only bird that is now to be found which sings this. To be admired, the 'Quakin' must be united with the double trill. This my chaffinch sings also.' 8. The 'Pithia,' or 'Trewethia,' a very uncommon and agreeable song, never heard but in the depths of the Thuringian mountains.

We shall not attempt to describe their 'songs and trills,' for it would be impossible by mere words to convey a clear idea of their respective characters and peculiarities. In England the merits of the chaffinch as a songster are not appreciated. Early in spring the love-notes of the male are to be heard in every field, and grove, or shrubbery, and are pleasing enough, but to our ears nothing more.

The habits and nidification of the chaffinch are too well known to need a detailed account. As winter approaches, the males and females separate; the former remain associated in large flocks; the greater body of the females migrate, though flocks of them are occasionally to be seen (Selby). Mr. Knapp says that in Gloucestershire the sexes do not separate, but unite in flocks, which frequent barn doors and homesteads. White observes, that the vast flocks which he saw near Selborne were composed of hens. In Middlesex, the flocks in winter are composed to a great extent of females. In the northern parts of Europe the females migrate, and leave the males behind: hence the specific name of *Cælebs* given

by Linnæus. We suspect that this separation and migration of the females is more marked and regular in the north of Europe, and in the more northern counties of our island, than in the midland or southern counties. During this mild winter (1847-8), our garden has been visited by single chaffinches both male and female in abundance.

The chaffinch is very destructive in gardens, far exceeding the sparrow in mischief. It pulls to pieces the flowers of the primrose and polyanthus; it nips off the tops of peas just springing up; it pulls up young turnips, radishes, and cress, and is, in short, a perfect nuisance; yet it is one of the most beautiful of our British birds.

The provincial names of this species are spink, beechfinch, pink, twink, skelly, shell-apple, horsefinch, scobby, shilfa, &c.

We may here observe, that, according to the Prince of Musignano, the chaffinch is very common near Rome, and makes its passage in October, when numbers are taken for the table among other small birds at Paratajo and Roccolo, the proportion of chaffinches being 500 for every 80 linnets, 65 goldfinches, 30 greenfinches, &c. Are not these the flocks of the more northern regions, on their travel southward?

(Yarrell's *British Birds*, and Selby's *Illustrations of British Ornithology*.)

CHAGRES, a river of New Granada, in South America, which falls into the Caribbean Sea, forming the harbour of Chagres, in about 80° W. long. It traverses a portion of the Isthmus of Panama, rising among the high mountains which approach the Bay of Mandinga. Its course is westward: nearly opposite the town of Puerto Bello it receives the Pequeni, whence it is navigable by canoes; but the navigation is dangerous, owing to rapids. At Cruces, a small town 44 miles from the mouth of the river, it becomes navigable for large barges. The whole course of the river hardly exceeds 80 miles. Commercial intercourse between Europe and the countries along the Pacific is facilitated by this river. Goods are brought on mules from Panama to Cruces, whence they are carried in barges to the town of Chagres. The port is a little sandy bay, with a ledge of rocks across its entrance, which has not more than 15 feet water in the deepest part. The town of Chagres, which contained about 1000 inhabitants, was entirely destroyed by fire on the night of October 8, 1847. [PANAMA.]

(*London Geographical Journal.*)

CHAILLETIA'CEÆ, an obscure natural order of polypetalous exogens, some of whose species are said to be poisonous.

CHAILLOT, formerly a village, now part of the *Quartier des Champs Elysées* in Paris. It is built on an eminence on the right bank of the Seine, and is separated from the *Quartier des Tuileries* by the Champs Elysées.

CHAIN (in Surveying) is a measuring chain of 100 links, altogether 4 poles, or 66 feet, or 22 yards in length, so that ten square chains make an acre. It is commonly called Gunter's Chain, having been first used by him, and described in his treatise on the Cross Staff, &c.

The chain is of universal use in modern surveying; but care must be taken to verify its length from time to time, since the material is very extensible, and the apparatus must necessarily be roughly used. It is stated in the account of Troughton ('Astronomical Society's Monthly Notice,' Feb. 1836), that the chains of two surveyors, who differed in their measurement, being sent to him, one was found two inches too short, the other three inches too long.

CHAIN-CABLES are iron chains used in lieu of hemp cables for anchoring vessels. The liability of hemp cables to be destroyed by the alternate action of air and water, and especially by chafing in rocky anchorage ground, led M. Bougainville to suggest the idea of substituting iron as early as 1771; but the idea was not taken up till 1808, when Mr. Slater, a surgeon in the navy, obtained a patent for a chain-cable. Even after this many years elapsed before their advantages were generally recognised. But chain-cables, like many other new things, are old things invented again. When Cæsar was in Gaul, the Veneti, on the coast of Britanny, used iron chains for their anchors instead of ropes. (Cæsar, 'De Bell. Gal.,' iii. 13.) Chain cables are usually furnished with bolts at the distance of one or two fathoms from each other, by withdrawing one of which a ship may slip her anchor in case of emergency in less time than would be required to cut a hemp cable. The weight of a chain-cable is an advantage while the ship is at anchor, as the strain is exerted on the cable rather than on the ship, and must be excessive before it can draw the cable straight.

CHAIN-SHOT. Two iron balls linked together by a chain eight or ten inches long are so called. They are used in naval actions.

CHALABRE. [AUDE.]

CHALA'ZA, that part in a seed where the vessels of the raphe pass from the exterior integument or primine, and expand into the secundine. In the common almond it is readily seen by turning the testa inside out, and observing that part which corresponds to the apex of the cotyledons. When the foramen of a seed is next the hilum, the chalaza is most conspicuous; but, when the foramen is at the apex of a seed, the chalaza will then be in contact with the hilum, with which it must necessarily be then confused.

CHALCE'DON, properly CALCHE'DON, a town of Asia Minor, on the coast of the Propontis, and at the entrance of the Bósporus, nearly opposite Byzantium. It was built by a colony from Mégara, 675 B.C. It was taken by the Persians, retaken by the Athenians, then recovered its independence, and entered into a confederation with Byzantium and other neighbouring cities. It was afterwards subject to the kings of Bithynia, and finally to the Romans. Calchedon is known for its council held A.D. 451, which was attended by 630 bishops from both the east and the west. It was the fourth œcumenic or general council of the church. The council condemned the heresy of Eútyches on the nature of Jesus Christ.

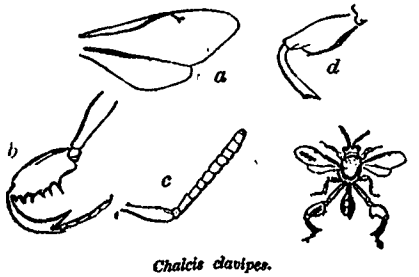
Calchedon is now a poor village, inhabited chiefly by Greeks, 2 or 3 miles south of Scutari, on the site of the ancient Chrysopolis.

CHALCIDES, or CHALCIDIANS, a family of lizards thus characterised by M. Bibron. Body generally cylindrical, greatly elongated, or serpentiform; limbs sometimes wanting or but little developed; trunk generally confounded with the head, and the tail exhibiting circular traces of rings, and generally a longitudinal furrow or fold of the skin between the belly and the sides; head covered with polygonal plates; teeth not implanted in the bones of the jaws, but applied to their internal edge; tongue free, little extensible, broad, and covered with filiform or squamiform papillæ, its point notched, and not inclosed in a sheath. This family is divided into two sections, 1, *Glyptodermes*, and 2, *Ptychopleures*. Under the first section come the genera *Chirotes*, *Amphisbæna*, *Lepidosternon*, *Trogonophis*. Under the second section are *Zonurus*, *Gerrhosaurus*, *Tribolonotes*, *Pantodactylus*, *Gerrhonotes*, *Ecpeliopus*, *Heterodactylus*, *Saurophis*, *Chamæsaura*, *Chalcides*, *Pseudopus*, and *Ophiosaurus*. The number of species described belonging to these genera, amounts altogether to 45. (Dumeril and Bibron, *Erpétologie Générale*, vol. v. p. 318.)

CHALCI'DICUM, an apartment separated by a partition from the body of a basílica or other large building. A building has been discovered in Pompeii, which appears to be a chalcidicum, from an inscription upon it.

CHALCI'DIDÆ, a family of hymenopterous insects, of the section *Pupivora* (Latreille).

Nearly all the species of this group are exceedingly minute. Many of them are very brilliant, their colours consisting of various shades of green, blue, or copperlike hues; in some of the sections, however, black is the prevailing colour. The thorax is usually large in proportion to the body, and the latter is often of a compressed form, and joined to the thorax by a distinct long petiole or stalk, as in *Chalcis clavipes*, which is one of the largest of the British species, measuring from tip to tip of the wings, when expanded, upwards of half an inch: it is of a dull black colour, and remarkable for the great development of the coxæ and femora of the hinder legs; the latter are of a reddish hue, and armed with eight little teeth beneath; the hinder tibiæ are curved. It is found on the leaves of shrubs in marshy situations. The femur and tibia of the Donacia tribe of Beetles are similarly formed to those of *C. clavipes*, and are obviously suited for clinging rather than leaping.



Chalcis clavipes.

a, the wings; *b*, the hind-leg; and *c*, antenna—magnified; *d*, hind-femur and tibia of a species of Donaciæ.

The Chalcididæ are all parasitical in their larva state. Some are so minute as to undergo their metamorphosis in the eggs of other insects. The chrysalides of some of the lepidopterous insects not unfrequently form the nidus of an immense number of these little insects. One species of Chalcis generally confines its attacks to the chrysalis of one species of lepidopterous insects; but occasionally we have reared more than one species of the Chalcididæ from the same chrysalis.

Mr. Walker, a gentleman who has written much on this group of insects, looks upon it as a great section of Hymenoptera rather than a family, and his views appear to us correct. The Chalcididæ are divided by him into two sections, which he calls *Chalcides pentameri* and *Chalcides tetrameri*, names applied from their having five-jointed or four-jointed tarsi; each of these sections is again subdivided into several families, the species of which are exceedingly numerous. Mr. Westwood, who, as well as Mr. Walker, has paid great attention to this interesting group, states that there are probably 1500 species in England.

CHALCIS. [EUBŒA.]

CHALDÆA. CHALDÆANS. Chaldæa is, according to Ptolemy ('Geogr.,' v. 20), the designation of the south-western portion of the Babylonian empire, extending along the Euphrates, and as far as the Arabian desert. Strabo, in his account of Babylonia, speaks of a tribe of Chaldæans occupying a country which borders on the Arabs and the Persian Gulf; and he evidently alludes to the same tract of land in describing the limits of Arabia, when he refers to 'the marshes in the country of the Chaldæi, which the Euphrates forms by its inundations.' Herodotus (vii. c. 63) merely mentions the Chaldæi as ranked with the Assyrians in the army of Xerxes, without defining the country from which they came. The ten thousand Greeks, in their retreat after the battle of Cunaxa (B.C. 401), had to pass their territory in the Carduchian Mountains, and on the banks of the Kentrites, a tributary of the Tigris. Gesenius and others are inclined to consider these mountaineer Chaldæi as the original stock; some descendants of which, the Casdim of the Old Testament, settled at a remote epoch in the plains around the lower course of the Euphrates, and were for a time subject to the Assyrian empire, but subsequently founded a Chaldæo-Babylonian dominion. The language which was spoken at Babylon, and which is always called the Chaldæan language, is of the Shemitic stock.

The sources of our information respecting the history of the Chaldæans are partly the fragments of Berosus, preserved by Eusebius and Josephus, and partly the books of the Old Testament.

According to the Old Testament, the foundation of the Chaldæan empire, in the plains of Shinar, was laid by Nimrod, the son of Cush (Gen. x. 8), that is, the Ethiopian. The book of Genesis (xiv. 1) mentions a king of Shinar, Amraphel, who was contemporaneous with Abraham. Then follows a long blank in the history of the country; and the next occasion in which we find it mentioned is during the reign

of Hezekiah, king of Judah (712 B.C.), when friendly relations subsisted between him and Merodach-Baladan, king of Babylon. (2 Kings xx. 12—18; Isa. xxxix. 1.) A new epoch begins with Nabopolassar, the father of Nebuchadnezzar. He was succeeded (B.C. 604, according to the computation of the Ptolemean canon) by his son Nebuchadnezzar, who extended his conquests as far as Egypt. He undertook three expeditions against Jerusalem, the last of which terminated with the capture of that city after a siege of two years. He died in 562 B.C., and was succeeded by his son Evil-Merodach, who in the second year of his reign was slain by Neriglissar, his brother-in-law. The reign of Neriglissar lasted four years, and he was followed by his son Laborosoarchod, or Labassoarascus, who after nine months fell a victim to conspiracy. Nabonitus, or Labynitus, probably the Belshazzar of the Old Testament, succeeded him. This is the king in whose reign Babylon became subject to the Persians. (Herod., i. c. 188.)

The government of the Chaldæans was absolute despotism. The religion of the Chaldæans was Sabæism, and consisted especially in the adoration of the sun, moon, the five planets, and the twelve signs of the zodiac. The worship of these heavenly luminaries led to astronomical observations, and to a regular division of time. It seems that the Chaldæans used a lunar year for all ordinary purposes; but for their astronomical observations they employed a moveable solar year. The constitution of the latter and its division into months appear to have been in every respect analogous to that of the Ægyptians. (Ideler, 'Lehrbuch der Chronologie,' Berlin, 1831, 8vo., p. 85, &c.) Astrology was much cultivated among the Chaldæans.

The situation of the Chaldæans near the mouth of the Euphrates and Tigris was particularly favourable to commerce. They were in communication with India, partly by caravans over land, and partly by sea through the Persian Gulf. The principal articles imported from India were precious stones, dyes, pearls, wood for building ships, and cotton. Babylon itself was famous for superior linen, woollen, and cotton cloth, and for carpets; and Herodotus also observed that seal-rings and walking-sticks, with the handles curiously carved, were much in use among the Babylonians, which proves that the art of carving in stone and wood must have been generally cultivated.

CHALDRON, a measure containing 36 bushels, heaped measure. The word appears to come from *caldarium;* in French *chaudron*, or *chaudrière.*

CHALI'COMYS, a genus of fossil rodent Mammalia, allied to the Beaver, from Eppelsheim, in tertiary beds.

CHALICOTHE'RIUM, a genus of fossil pachydermatous animals allied to the Tapirs, comprising two species found at Eppelsheim, about 12 leagues south of Mayence, in sand, supposed to be of the second tertiary or Miocene period of Lyell. (See Kaup's *Description d'Ossemens Fossiles,* Darmst., 1832.)

CHALK, in Geology, forms the higher part of the series or group termed cretaceous. [CRETACEOUS GROUP.]

Chalk is composed of nearly 44 parts of carbonic acid and 56 parts of lime. It is extensively used in agriculture, to improve various soils. Chalk is called a manure, and it is a manure so far as every thing which increases the crop may be so called; but it is a mistake to suppose that it may be substituted for animal and vegetable manures. Chalk may so far supersede dung, that where it is used a portion of dung may be dispensed with; but its chief use is to improve the texture of the soil. Chalk will make dung work well, and hence it is frequently mixed into a compost with it, or alternate heaps of dung and chalk are put upon the land and mixed in the spreading. Before chalk is used, it is of great importance to ascertain whether the natural soil contains more or less of calcareous matter. The less of this matter is found in it on analysis, the greater improvement is produced by chalk.

The soils most improved by chalk are the strong wet clays, which contain a portion of iron. Chalk acts as an absorbent, corrects astringency, and prevents clay from becoming a solid mass. On loose sands it acts chiefly as a cement, binding the silicious particles together. In districts where chalk is much used, it is generally put on the land in autumn, and not ploughed in till it has been exposed to the frost. If it be exposed to the sun in summer, it must be carefully covered with earth, otherwise it will harden so much that the frost will not have the same effect in pulverising it. If the grass is fed off the last year, the chalk may be put on during the preceding winter, and simply spread over the grass; it will thus be pulverised by the frost, will sweeten the pasture, and its full effect will be perceived in the first grain-crop after the land is ploughed up. When chalk has been some time in the land, it is gradually carried below the soil by the filtration of the surface-water. After a few years therefore it requires to be renewed, which shows the advantage of putting on a moderate quantity and repeating it in six or seven years, in preference to putting on a large quantity at once, unless where lands are reclaimed from a state of waste, and require to be improved by a large admixture of calcareous matter before they can be made productive by enriching manures.

It is of advantage to throw chalk into ponds used by cattle; it corrects any acidity which may arise from stagnation. In fattening calves chalk is of great use; it may be laid in the calf-pens for them to lick, or it may be scraped and mixed with a small quantity of salt, and laid in a small manger within the reach of each calf. It prevents scouring, and keeps their digestion in a proper state.

CHALK-STONES. [CALCULUS.]

CHALLENGE. [JURY.]

CHALMERS, DAVID, was born in the shire of Ross about the year 1530. He was bred to the church, took orders at Aberdeen, and studied theology and the law in France and Italy. At Bologna he was, in 1556, the pupil of Mariannus Sozenus. On his return to Scotland he was employed in digesting the laws of Scotland, and was

principally concerned in publishing the acts of parliament of that kingdom, by authority, in 1566.

On Jan. 26, 1565, he was admitted an ordinary lord of session on the spiritual side, but in 1568 was deprived of his office for his adherence to the cause of Mary. He then retired to Spain, whence he went to France, where, in 1572, he presented Charles IX. his 'Histoire Abrégée de tous les Roys de France, Angleterre, et Ecosse;' and in 1573 he published his 'Discours de la Legitime Succession des Femmes, et du Gouvernement des Princesses aux Empires et Royaumes.' In 1583 he returned to Scotland, and was restored by the king to all his lands, offices, and dignitaries; and in 1586 he was restored to his seat on the bench, which he retained till his death in 1592.

CHALMERS, GEORGE, was born at Fochabers in Elginshire, in 1742. After studying law, he went to the British colonies of North America, where he practised at the bar until the breaking out of the revolutionary war. He then returned to Britain, and settled in London. He wrote 'Political Annals of the United Colonies, from their Settlement till 1763,' and 'An Estimate of the Comparative Strength of Great Britain,' which works are said to have introduced him to an official connection with the Board of Trade, which he maintained till his death, May 31, 1825, aged 82 years. Chalmers was also the author of 'Caledonia,' a topographical history of North Britain, of several biographies, and he contributed occasionally to periodicals.

CHALMERS, ALEXANDER, was a native of Aberdeen, where he was born March 29, 1759. Early in life he settled in London, and maintained himself by his literary labours. He died Dec. 10, 1834, aged 75 years. He contributed largely to the political and literary periodicals of the day, and edited a great variety of works. The chief are—'The British Essayists, with Prefaces, Historical and Biographical,' in 45 vols.; 'Shakspeare,' in 9 vols.; the 'Works of the English Poets, from Chaucer to Cowper,' in 21 vols.; a 'History of the Colleges, Halls, and Public Buildings of Oxford,' and a 'General Biographical Dictionary,' in 32 vols.

CHALMERS, DR. THOMAS, was born at Anstruther, in Fife, in April 1780. He was educated for the Church of Scotland at the university of St. Andrew's. After leaving the university he was for about two years assistant minister in the parish of Cavers, and was then presented to the living of Kilmany in Fifeshire. While he held this office he became a candidate for the Mathematical Chair in the university of Edinburgh, vacant by the translation of Professor Playfair, but withdrew from the contest at an early stage. The publication of a few of his sermons, and the contribution of his article 'Christianity' to the Edinburgh Encyclopædia drew attention towards him, and in 1814 he was translated to the Tron Church at Glasgow, where he rapidly extended his fame as an eloquent preacher, acquired the position of a leader in the church, and became an active promoter of every scheme for the moral and physical amelioration of the condition of his fellow-men. In 1824 Dr. Chalmers was appointed Professor of Moral Philosophy in the university of St. Andrew's, and in 1828 Professor of Theology in the university of Edinburgh. The degree of LL.D. was conferred on him by the University of Oxford, and he was also elected a corresponding member of the Royal Institute of France. Dr. Chalmers had been long the recognised leader of the party in the Scottish church opposed to patronage; and in 1842, when the dispute ended in a disruption, and the secession of a large number of the established ministers, he was elected principal and primarius professor of theology of the seceding body. His exertions in behalf of the newly constituted Free Church were incessant, arduous, and successful; but on the morning of May 31, 1847, while surrounded with the papers and materials for preparing a report of the College Committee to the General Assembly of the Free Church, without any previous illness, and apparently without pain, he was found dead in his bed, at his residence at Morningside, near Edinburgh.

The published works of Dr. Chalmers take a wide range—theology, church government, political economy, natural philosophy, and science; and all have been amongst the most popular of their respective classes. We need only mention his 'Discourses on Astronomy,' 1817; 'Commercial Discourses,' 1818; 'The Civic and Christian Economy of Large Towns,' 1821; the Bridgewater Treatise 'On the Constitution of Man;' and 'Evidences of the Christian Religion.' His collected works form 25 vols. 12mo., and a large quantity has been left in MS., sufficient it is said to form 12 or 15 vols. more, one of which 'Horæ Biblicæ,' has been published since his death by his son-in-law, the Rev. Dr. Hanna, who is also preparing a life of Dr. Chalmers.

CHALONNE. [MAINE-ET-LOIRE.]

CHÂLON-SUR-SAONE, a large, ancient, and handsome town in the department of Saône-et-Loire, stands on the right bank of the Saône, at the point where that river is joined by the Canal-du-Centre, which unites the Saône with the Loire. It is situated in the centre of a vast plain, covered with meadows, cultivated fields, vineyards, and copse. The finest part of the town extends along the river, the banks of which are lined with quays. The suburb of St.-Laurent is built on the left bank of the river, but is joined to the rest of the town by a stone bridge of 5 arches. The most remarkable objects are the cathedral, a Gothic structure of the 13th century; the church of St.-Pierre; the hospice of St.-Laurent, founded by Francis I. in 1529; the hospital of St.-Louis, situated in the suburb of Sainte-Marie, and founded in 1682, as an asylum for poor old men and orphans; the obelisk erected in 1793 to commemorate the opening of the Canal-du-Centre; and the public library. The Place-de-Beaune is a handsome square, in the centre of which there is a beautiful fountain surmounted by a statue of Neptune. The town has tribunals of first instance and of commerce, an exchange and chamber of commerce, a college, and a small theatre. Hats, vinegar, oil, imitation pearls, and pottery are the chief articles of manufacture.

There are also dye-houses, iron-foundries, and oil and flour mills worked by steam machinery. Corn, flour, wine, colonial products, cattle, wool, fuel-wood for Lyon, coal, charcoal, iron, plaster of Paris, tiles, bitumen, and the manufactures both of the north and south of France enter into the commerce of the town. Châlon is 77 miles north of Lyon, and has a population of 14,342. By means of the Saône, which from Châlon is navigable for steamboats, and the Canal-du-Centre, the town has a large transit trade between the Mediterranean and the Atlantic. (*Dictionnaire de la France*; Balbi, *Géographie.*)

CHÂLONS-SUR-MARNE (the ancient *Duro-Catalaunum*), the capital of the department of Marne in France, stands on the right bank of the Marne, in 48° 57′ N. lat., 4° 21′ E. long., at a distance of 105 miles E. from Paris, and has 14,683 inhabitants. It is situated among meadows watered by the Marne, which is here crossed by a fine stone bridge. The town was formerly surrounded by ramparts, now almost entirely demolished, and entered by six gates, one of which, on the road leading to Vitry, has the form of a triumphal arch. The town is badly built, but contains some fine structures, among which the cathedral of St.-Etienne, the churches of Notre-Dame, St.-Alpin, St.-Jean, and St.-Loup, the town-house, the former Benedictine abbey, now converted into barracks, and the residence of the Prefect of the department, which is one of the finest edifices of its kind in France. Other remarkable objects at Châlons are the riding-school, the theatre, the college, the public library, containing 20,000 volumes, the royal school of arts and trades, in which 450 students are maintained by the government and instructed in several arts and mechanical trades, the cabinet of natural history, the botanical garden, and the magnificent promenade called *Jard*, which is on the east side of the town, and covers an area of 19 acres. The town is the seat of a bishop, whose see comprises the department of Marne, with the exception of the arrondissement of Reims. It has tribunals of first instance and of commerce, and two ecclesiastical seminaries. The manufactures consist of fine rateens, girthweb, woolcombers' cards, hosiery, cotton yarn, and leather; the chief articles of commerce are corn, hemp, wool, rapeseed oil, and Champagne wine. Châlons is the head-quarters of the second military division, which comprises the departments of Marne, Meuse, and Ardennes. (*Dictionnaire de la France;* Balbi, *Géographie.*)

CHALUS. [VIENNE, HAUTE.]

CHALYBÆUS, a genus of birds separated from the Cassicans (*Barita*) by Cuvier. They have, he says, the beak of the same form as in *Barita*, but a little less thick at its base, and the nostrils are pierced in a large membranous space. The species known come from New Guinea, and are remarkable for the brilliancy of their tints of burnished steel. He enumerates two species *C. paradisæus* (*Paradisæa viridis*, Gmelin), and *C. cornutus*.

These brilliant birds appear to us to approach the crows in form. Indeed Lesson says, 'The *Chalybæus* lives solitary in the forests of New Guinea. We often saw it perched on the great trees where it seeks for fruits. Its manners appeared to have great analogy to those of the crows.'

CHALYBEATE SPRINGS. Of all mineral waters, those containing iron are the most common; but such only are considered chalybeates, in a medical sense, in which the iron predominates, if not in quantity, at least in action, over the other ingredients. The quantity and combinations of the iron vary in every spring; but it is generally combined with carbonic acid, in the form of protoxide or proto-carbonate, and is deposited in considerable quantity in the form of oxide, when the water reaches the external air. The presence of chalybeate springs may generally be detected by the appearance of the stream or water-course. The styptic taste of the water also indicates the presence of iron. In other instances it is combined with sulphuric acid, in the form of sulphate of iron; it is often associated with alumina; and more rarely hydrochloric acid is combined with it. When a large proportion of free carbonic acid is present, such springs are termed *acidulo-chalybeate*.

Cold chalybeate waters, with proper conveniences for their employment, are not very numerous in Britain. Tunbridge, Harrowgate, and Holywell, in England and Wales; and Hartfell, Peterhead, Dunblane, and Bonnington, near Edinburgh, are the chief. Chalybeate waters may be employed either internally or externally in the form of baths; the former mode is the most common in this country. The use of chalybeate waters possesses many advantages over the other modes of administering iron, and not only enables many to employ this metal, but likewise to persevere with it for a much longer time. The persons who require chalybeate waters are those who need tonics to improve their constitution and remove a tendency to disease; or convalescents from acute disease; or persons who have been debilitated either by a residence in warm climates or by severe mental exertions. Persons of a plethoric habit can rarely use them without undergoing some preparatory treatment.

CHAMA'CÆA or CHA'MIDÆ, a family of conchiferous bivalve mollusks, generally known as Clams. Cuvier ranges under this family the genera *Chama, Tridacna, Hippopus, Dicerates*, and *Isocardia*.

As examples we may notice the Giant Clam from the East Indies (*Tridacna gigas*), the shell of which often weighs from three to four hundred pounds. Its *byssus* or cable is of enormous strength. The Spotted Clam (*Hippopus maculatus, Chama hippopus*, Linn.) is very beautiful, and much in request for ornamental articles. (See Cuvier's 'Règne Animal,' vol. iii. p. 141; also Deshayes in his edition of Lamarck; Rang in his 'Tableau Méthodique;' De Blainville; and Broderip, in 'Trans. Zool. Soc.' Lond., 1834, p. 301, who describes several new species.)

The *Chamidæ* are confined to the warmer seas, the Mediterranean being the locality of the lowest temperature where any of the species have been hitherto found.

The fossil species are numerous, and occur in the supercretaceous groups, particularly in the

subapennine beds, and those of Bordeaux and Dax; in the cretaceous group; and also in the oolite. According to G. B. Sowerby, they are found in the London clay, the calcaire grossier, and also in the chalk and green-sand.

CHAMBRON, LE. [LOIRE.]

CHAMÆDO'REA, a genus of palms, also called Nunnezharia and Nunnezia. They are small reed-like plants, with ringed shoots. *Ch. fragrans* is a Peruvian plant with a stem about a man's height, and so fragrant as to fill the groves with its perfume in the months of August, September, and October.

CHAMÆLE'DON PROCUMBENS, a beautiful little Alpine bush, formerly referred to Azalea, from which it differs essentially both in habit and botanical characters. It is a small evergreen creeping shrub, found on the mountains of Europe and North America. It is occasionally seen in gardens, but it is rather impatient of cultivation.

CHAMÆLEON, a constellation near the South Pole, formed by Bayer.

CHAMÆ'ROPS, a genus of palm-trees, in which is comprehended the most northern species of those remarkable vegetable productions whose home is so frequently in the tropics. *Chamærops humilis*, the European species, grows in hothouses to the height of fifteen feet; but in Spain and Barbary it is not more than four or five feet high, and in Italy it is much dwarfer. It is common upon the hills near Algiers; it occurs in many places in the southern parts of Italy, and reaches its northern limits in the vicinity of Nice. The trunk of this plant is five or six inches in diameter, and closely covered with triangular hard scales, which are the bases of the ancient leaves. The new leaves grow in a tuft at the top of the stem, and have smooth flat stalks, with rigid spines proceeding from the edge.

CHAMBER, a recess formed at the lower extremity of the bore of a gun, howitzer, or mortar, and in the direction of the axis, in order to receive the charge of powder by which the shot or shell is to be projected. It is made of a cylindrical, hemispherical, or parabolical form; and, from some recent experiments, it appears that the last kind is preferable to the others.

The Gomer Chamber, so called from the name of the inventor, is made in the form of a frustum of a cone, terminating with a concave hemisphere at the smaller part, which is the extremity of the chamber, and the greater circumference coinciding with that of the bore. The shot or shell, being placed in close contact with the conical part of a chamber of this kind, thus becomes subject to the whole force of the elastic fluid.

CHAMBER, IMPERIAL. [IMPERIAL CHAMBER.]

CHAMBERLAIN (*custos cubiculi*, or *cubicularius*, keeper of the chamber). Cubicularius was the Roman name for a slave whose business was to look after the rooms or chambers in the house, introduce visitors, and the like. Under the emperors the cubicularii were officers in the imperial household, and were called the 'cubicularii sacri cubiculi,' the chamberlains of the imperial chamber. ('Cod.' xii. tit. 5.) This office, like many others in royal households, is derived from the usages of the later Roman empire. The word chamber (French, *chambre*) is from the Latin camera.

The office of lord great chamberlain of England was once of the highest dignity, and was held in grand serjeanty. The duties of the great chamberlain are, the dressing and attending on the king at his coronation; the care of the ancient Palace of Westminster; the provision of furniture for the Houses of Parliament, and for Westminster Hall, when used on great occasions; and attendance upon peers at their creation, and upon bishops when they perform their homage. The office is now jointly held by the families of Cholmondeley and Willoughby de Eresby, and it is exercised in each alternate reign by each family successively.

The lord chamberlain of the king's household has the control of all parts of the household (except the ladies of the queen's bed-chamber) which are not under the direction of the lord steward, the groom of the stole, or the master of the horse. The king's chaplains, physicians, surgeons, &c., as well as the royal tradesmen, are by his appointment; the companies of actors at the royal theatres, as part of the household, are under his regulation; and he is also the licenser of plays. One of the officers in his department is styled Examiner of Plays.

The chamberlain of the city of London is an officer elected by the freemen who are liverymen. The duties of the chamberlain are judicial and administrative. He admits on oath all persons entitled to the freedom of the city, and hears and determines all matters of complaint between masters and apprentices. The chamberlain has the conservation of lands, moneys, or goods, of citizens who die intestate, leaving orphans, on the application of such orphans or others on their behalf, for which the chamberlain is deemed in law a corporation sole; but such applications are now rarely made. He is also the treasurer of the city of London. The fixed annual income of the chamberlain is 1160*l.* 9*s.* 4*d.*: his 'ancient bill of fees' is 94*l.* 4*s.* a year. He obtains an annual profit of 1000*l.* to 2000*l.* from balances of the corporation money retained in his hands.

In the Exchequer Court of the County Palatine of Chester there is a chamberlain, an office generally held by a nobleman; and there is also a vice-chamberlain.

CHAMBERS, EPHRAIM, was born at Kendal, in the latter part of the 17th century. While yet an apprentice to a globe-maker in London, he conceived the design of the Cyclopædia which has chiefly preserved his name. The first edition of the Cyclopædia appeared in 2 vols. fol. in 1728, and was very favourably received. It was published by subscription, the price of each copy being four guineas. A second edition appeared in 1738, and a third in 1739. Mr. Chambers was engaged in several other literary undertakings, but none of any celebrity. He died on May 18, 1740, at Canonbury House, Islington. Several editions of his Cyclopædia, with additions, have been published since his death, and it is avowedly

the basis of the greatly more extended Cyclopædia, in the conduct of which Dr. Rees afterwards engaged, and which he lived to complete in forty-five vols. 4to. (London, 1802-1819). Indeed, it may be said to have originated all the modern Cyclopædias, both in the English and in other European languages.

CHAMBERS, SIR WILLIAM, was born in 1726, at Stockholm, in Sweden, where his grandfather, a merchant, descended from a Scotch family, had established himself in order to prosecute certain claims on the government of that country. At two years of age he was brought to England, and put to school at Ripon in Yorkshire. When a very young man, it is said he made a voyage to China as supercargo, in the service of the Swedish East India Company; and when yet only eighteen he is said to have settled in London, and taken up the profession of an architect and draughtsman. In these capacities he obtained considerable reputation, and soon after the accession of George III. he was employed to lay out the royal gardens at Kew. In this task he displayed that predilection for the Chinese style, both of gardening and architecture, of which he had already given intimation in a work, entitled 'Designs for Chinese Buildings,' published in 1759. Meanwhile he had also, by a villa in the Italian style, which he erected at Roehampton for the Earl of Besborough, and by various other buildings, obtained much reputation and employment as an architect. In 1772 he published his 'Dissertation on Oriental Gardening.' This is another vindication of Chinese tastes and fashions, and was satirised in the once famous 'Heroic Epistle to Sir William Chambers, Knight, Comptroller General of his Majesty's Works, and author of a late Dissertation on Oriental Gardening; enriched with explanatory Notes, chiefly extracted from that elaborate performance,' suspected to have been written by Mason, whose 'English Garden' it was thought to be intended to answer. In 1775 Sir William was appointed to superintend the rebuilding of Somerset House, which is his best work. In 1791 he published his 'Treatise on Civil Architecture,' of which two new editions, one by Joseph Gwilt, F.S.A., the other by an anonymous editor, appeared in 1824. Sir William died on March 8, 1796. As an architect, although his taste was fantastic, he frequently showed considerable ingenuity, and also displayed a certain grandeur in his designs. His staircases, in particular, used to be much admired. The street-front of Somerset House is in all respects better adapted to a great city than the Greek models which are frequently adopted. After Somerset House, among Chambers's most successful efforts are the mansions which he built for the Marquis of Abercorn, at Duddingstone, near Edinburgh, and Milton Abbey, in Dorsetshire, which he built in the Gothic style, for Lord Dorchester.

CHAMBERS, GEORGE, a painter of shipping, was the son of a poor seaman of Whitby in Yorkshire, where he was born towards the close of the last century. In early life he was apprenticed to the master of a trading brig; but, having shown much talent in making sketches of shipping for the amusement of the seamen, his master was induced to cancel his indentures, and Chambers returned to Whitby with the determination to become a painter. At Whitby, while he pursued the occupation of a house-painter, in order to make himself acquainted with colours, he found time to produce a number of shipping pieces, which, at low prices, found a market, and he also took lessons of a drawing master. In about three years he went to London, where he contrived to obtain considerable employment in the representation of ships. He was afterwards employed for some years by Mr. Horner, on the Panorama of London at the Coliseum, and as scene-painter at the Pavilion Theatre. While at this theatre, some of his works attracted the notice of Vice-Admiral Lord Mark Kerr, who procured him an introduction to King William IV. and Queen Adelaide, who appointed him their marine painter.

He was now in a fair way of establishing fame and fortune together; but a constitution originally weak gave way under his exertions, and he gradually fell into a disease which proved fatal to him: he died of aneurism of the aorta, in October 1840, leaving a wife and three children.

Chambers was a member of the Society of Painters in Water-Colours, in which style he drew with great elegance and effect. His chief productions however are his naval battles in oil, in which he was excellent, and of which three are in the hall of Greenwich Hospital.

CHAMBE'RY, the capital of the duchy of Savoy, is the seat of the military governor, and of the supreme court of justice for the whole duchy. [SAVOY.] It stands in a fine valley, between two ridges which run from the Rhone to the Isère. The valley is watered by the Leisse, which falls into the lake of Bourget, 8 miles north-west of Chambery. Chambery has a royal college, an academy of sciences, which publishes its memoirs; a public library, containing 16,000 volumes; a theatre; three barracks, and a school of design. There are many hospitals, and other charitable institutions, several of which were founded by General Boignes, a native of the town. The churches have some good paintings. The population of the town is 16,000. Chambery is the seat of an archbishop, and is famous for the manufacture of silk gauze. (Bertolotti, *Viaggio in Savoja.*)

CHAMBORD. [LOIR-ET-CHER.]

CHAMELEONS, the name of a family of Saurian reptiles or lizards (*Chamæleonidæ*), placed by Cuvier in close approximation with the Geckos: one genus alone, whatever minor subdivisions may be made, is definite, viz. *Chamæleo*, or, as the Greeks wrote it, *χαμαιλέων*. This singular and isolated group of arboreal prehensile-tailed reptiles is confined to the old world, but most are natives of Africa, and the adjacent islands, as Madagascar and Fernando Po. One species, the Fork-nosed Chameleon, is a native of the Moluccas, Bourbon, the continent of India, and also of Australia. The common Chameleon is found in northern Africa and the south of Spain. A variety, or, as we think, a distinct but closely allied species, is indigenous in India. Another species (*Ch.*

dilepis, Leech) appears to inhabit Georgia (specimens having been received at Paris from Tiflis), and also Guinea. (See Bibron in 'Erpét. Gén.,' vol. iii. p. 225 6.) About 15 or 16 species are known and described.

We may sum up the generic characters of the Chameleons as follows:—Tongue cylindrical, worm-like, and capable of being greatly elongated, and darted forth to an extraordinary extent; it terminates in a fleshy tubercle lubricated with viscid saliva: skin covered with horny granules instead of scales: body deep and compressed, surmounted by an acute dorsal ridge: head surmounted by a casque: tail round, tapering, and strongly prehensile: feet parrot-like: three anterior toes, two posterior toes connected together as far as the last joint, and all armed with sharp claws: no traces of an external ear: head large, and, from the shortness of the neck, set upon the shoulders: mouth wide, teeth sharp, small, and three-lobed: eyes, though in themselves large, appearing minute, the whole of the ball, except the pupil, being covered with skin, forming a single circular eyelid with a central orifice. The furrow between the ball of the eye and edge of the orbit is deep, and the eyelid is closely attached to the ball as it moves. Each eye has the power of motion independent of its fellow.

Chameleon (*Chamæleo vulgaris*).

These reptiles feed on insects which they take by launching their glutinous tongue at them; its motion is extremely rapid. On the other hand, the movements of their clinging limbs are unsteady, slow, and vacillating, but the grasp of the feet is extremely tenacious, as is that also of the tail. The lungs are most extraordinarily voluminous, and it is to their influence on the blood that Cuvier attributes the changing colours of these reptiles under the influence of fear or other passions. M. Milne Edwards considers that there are two layers of differently coloured pigments in the skin, by the mixture of which, in different proportions, the colours vary; while M. Weissenborn, admitting that the skin may possess different layers of pigments, observes that this will not solve all the phenomena. Other lizards, as the *Anolis*, *Polychrus*, &c., also change their colours, and so do the naked cuttle-fishes. On this subject much remains to be elucidated. Like all the saurian reptiles, the Chameleons are oviparous. They bear long abstinence from food apparently without injury. In these reptiles the first ribs are themselves joined to the mesial line which performs the office of sternum, and the following are united to each other by cartilaginous prolongations, so as to protect the abdomen by an entire bony circle.

(*Erpet. Générale*, vol. iii., and Weissenborn, in *Ann. and Mag. of Nat. Hist.*)

CHAMISSO, ADELBERT VON, a poet, naturalist, and traveller, was born on January 27, 1781, in the château of Boncourt in Champagne. He belonged to a very ancient noble family of Lorraine, and on the breaking out of the revolution, the family were forced to leave the country, and they ultimately went to Berlin, where Adelbert became one of the pages of the Queen of Prussia. He made himself thoroughly acquainted with the German language and literature; and in 1798 he entered the Prussian army. After the peace of Tilsit Chamisso quitted the Prussian service, and in 1810 he returned to France, where he remained but a short time. He went back to Germany, and devoted himself to the study of the natural sciences. In 1813 he wrote 'Peter Schlemil,' the story of a man who loses his shadow. This work, which has been translated into English and most other European languages, was first published in Germany by Chamisso's friend De la Motte Fouqué (1814), which has led some persons to look upon it as the production of Fouqué. In 1814 Count Rumjanzow, chancellor of the Russian empire, prepared an exploring expedition round the world at his own expense. He invited Chamisso to accompany the expedition as naturalist, and the invitation was accepted. In 1815 Chamisso embarked at Cronstadt under Captain Kotzebue, and returned thither in 1818. An account of the voyage was published by Kotzebue in two volumes, and Chamisso himself published 'Bemerkungen und Ansichten auf einer Reise um die Welt,' Weimar, 1821, 4to., which contains a most faithful account of every thing that came within the range of his personal observation. After his return to Berlin, Chamisso received the appointment of inspector of the botanical gardens of that city. While in this situation, he wrote a botanical work, 'Uebersicht der in Norddeutschland vorkommenden nützlichsten und schädlichsten Gewächse, nebst Ansichten über das Pflanzenreich und Pflanzenkunde,' Berlin, 1827. During the last ten years of his life he produced a number of small poems, many of which, especially his popular legends and ballads, belong to the best productions of the kind in German literature. He died Aug. 21, 1838, at Berlin. His poems were collected and published separately, Leipzig, 1831, in 1 vol. 8vo.; and a collection of all his works, both in prose and in verse, was published at Leipzig, in 4 vols. 8vo., 1835; and a second edition in 1842, in 6 vols. 12mo., the last two of which contain Chamisso's life and correspondence, edited by J. E. Hitzig.

CHAMOIS. [ANTELOPE.]

CHAMOMILE. [ANTHEMIS NOBILIS.]

CHAMOND, ST. [LOIRE.]

CHAMOUNY. [Blanc, Mont.]

CHAMPAGNE, one of the provinces into which France was divided before the Revolution of 1793, was bounded N. by Belgium, E. by Lorraine, the duchy of Bar, and Franche-Comté, S. by Bourgogne, and W. by l'Isle-de-France. It was divided into 8 districts,—1. Champagne Proper, which contained the towns of Troyes, Châlons-sur-Marne, Sainte-Ménehould, Epernay, and Vertus: 2. Remois, in which were Reims, Rocroy, Fismes, Château-Porcien: 3. Rethelais, the chief towns of which were Rethel, Mézières, Charleville, and Donchery: 4. Perthois, in which were Vitry-le-François, and St.-Dizier: 5. Vallage, containing Joinville, Bar-sur-Aube, Arcis-sur-Aube, and Vassy: 6. Bassigny: 7. Senonais, comprising the towns of Sens, Joigny, Tonnerre, Chably: 8. Brie-Champenoise, which contained Meaux, Provins, Château-Thierry, Coulommiers, Montereau-faut-Yonne, and Bray-sur-Seine. The greatest length of the province was about 180 miles, and the greatest breadth 150. The surface presents extensive plains, with ranges of hills, particularly towards the east and north. The soil and produce are of great variety. In some parts, especially in the plains, the soil is light, resting on a chalk bottom, ill fitted for tillage, but producing tolerably good pasture: in others it is deep and loamy, yielding excellent wheat, vegetables, and fruits of all kinds. Most of the hills are planted with vines, which produce the famous Champagne wines.

Champagne included two archbishoprics, Reims and Sens; four bishoprics, Langres, Châlons, Troyes, and Meaux, and a great number of abbeys, the most celebrated of which was that of Clairvaux. [Aube.] It now forms the departments of Marne, Haute-Marne, Aube, Ardennes, and part of those of Yonne, Aisne, Seine-et-Marne, Meuse, Côte-d'Or, Haute-Saône, and Vosges.

In the time of Julius Cæsar, the territory subsequently called Champagne was inhabited chiefly by the Remi, the Sénones, the Lingones, and the Tricasses, from whom the names of the cities Reims, Sens, Langres, and Troyes are said to be derived. It belonged to the Roman Empire till A.D. 486, when Siagrius was defeated by Clovis, who, as well as his son Clothaire, held the territory, which probably got the name of *Campania* (Champagne) about this time. From the time of Charles the Simple to the year 1274, Champagne was governed by counts and dukes, who, at first appointed by the king, had contrived to render their power hereditary. On the death of Henri III., Count of Champagne and King of Navarre, in the last-mentioned year, Champagne reverted to the crown of France in consequence of the marriage of his daughter, Joan of Navarre, to Philippe le Bel. The following works may be consulted with advantage on the history of Champagne:—Beaugier, *Mémoires Historiques de la Province de Champagne;* Béraut, *Histoire des Comtes de Champagne et de Brie*, 2 vols. 8vo., Paris, 1839.

(*Dictionnaire de la France.*)

CHAMPAGNE WINE is the produce of the vineyards of the departments of the Marne, Haute-Marne, Ardennes, and Aube, which were comprehended in the ancient province of Champagne. Of the various growths of Champagne, that made on the banks of the Marne has the highest reputation, and forms the greater part of what is sent to foreign countries. Champagne wine is light in body: it is of various colours, white, straw-colour, pink, and red; and these are divided into sparkling, creaming, and still, or, as they are called in France, *mousseux, crémant,* and *non-mousseux.* The red wines of good quality are, for the most part, exported to Belgium, and the white to England, Russia, Germany, the Levant, Greece, and the French West India colonies; some portion of the shipments to England are re-shipped to India and other parts. The details of the vintage are given under Wine.

CHAMPAGNE, PHILIPPE DE, was born in Brussels, in 1602. He studied painting under masters in his native place, and at the age of nineteen he went to Paris, where he married the daughter of Duchesne, to whom, on his death, he succeeded as painter to the Queen of France. He died in 1674. Champagne laboured with extreme assiduity, and acquired great facility. His portraits are most esteemed, particularly one of Richelieu. His principal works are at Paris, where he spent nearly the whole of his life.

CHAMPAGNOLE. [Jura.]

CHAMPLAIN, LAKE, in North America, lies between the Green Mountains in the State of Vermont, and the Essex Mountains in the State of New York. It extends from 43° 33′ to 45° 4′, about 5 miles into Lower Canada, making the entire length about 109 miles, exclusive of the wide part of the channel of the river Richelieu, or Sorelle, which is upwards of 20 miles long. The lake is navigable as far as the town of St. John, in Lower Canada, from Whitehall, in the State of New York, which is at its southern extremity. The width varies from half a mile to 20 miles. The depth in some parts is very great. The Champlain Canal, 64 miles long, extends the navigation from Lake Champlain southwards into the river Hudson. [New York; Vermont.]

CHAMPOLLION, JEAN FRANÇOIS, LE JEUNE, so called to distinguish him from his elder brother, generally called Champollion Figeac, was born at Figeac, in the department of Lot, in France, in 1790. He studied in the lyceum of Grenoble, and afterwards went to Paris in 1807, where he applied himself to oriental languages under Langlès and De Sacy, especially to the study of the Coptic, and to Egyptian archæology. In 1811 he was appointed professor of history in the lyceum of Grenoble, and librarian of the public library. In 1814 he published his first work, 'L'Egypte sous les Pharaons,' 2 vols. 8vo. In 1821 he published at Grenoble a little work, 'De l'Ecriture Hiératique des Anciens Egyptiens,' in which he stated his opinions, that the hieratic characters were merely a modification of the hieroglyphic symbols, which was adopted for the sake of brevity, and as a sort of hieroglyphic short-hand, and were not alphabetical characters, as it had been supposed by some; the hieratic characters, as well as the hie-

roglyphic, from which they are derived, being expressive of objects and not of sounds.

In the year following appeared Champollion's letter to M. Dacier, the secretary of the academy of inscriptions and belles lettres. In this letter he retracted what he had formerly asserted, in so far that he now demonstrated what Dr. Young had already stated in November 1819, in the supplement to the 'Encyclopædia Britannica,' art. 'Egypt,' namely, that the Egyptians used occasionally hieroglyphic signs as alphabetical characters on their monuments, to express the names of foreign sovereigns, Greek and Roman, who ruled over their country. In the introduction to his new work, 'Précis du Système Hiéroglyphique,' &c. Champollion observes, and his friend Rosellini confirms it in his biography, that he came to the same conclusion as Dr. Young, contemporaneously with the latter, and by his own investigation; but this assertion is at variance with the statements of the Grenoble work already mentioned, which was published nearly two years after the publication of Dr. Young's discovery. Champollion however improved upon Dr. Young's hint, and deduced a phonetic alphabet, applicable not only to the names and titles of foreign sovereigns, but also to those of the native sovereigns and of the divinities of ancient Egypt. Champollion used the word phonetic to express characters denoting sounds, a term which had been used long before him by Zoega, in the same sense, in his work on Obelisks. In his 'Précis du Système Hiéroglyphique,' &c., Paris, 1824, he asserted—1, 'that his phonetic alphabet is applicable to all the royal names of the most ancient epochs; 2, that the ancient Egyptians employed at all epochs phonetic hieroglyphics to represent alphabetically the sounds of their spoken language; 3, that all hieroglyphic inscriptions are in a great measure composed of signs purely alphabetical, and such as are determined in his phonetic alphabet.' The last two positions are mere assertions, unsupported by proof. Klaproth, in his 'Observations Critiques sur l'Alphabet Hiéroglyphique découvert par M. Champollion le Jeune,' has in our opinion demolished Champollion's general theory, and reduced his discovery to its proper limits.

Charles X., having determined to purchase a valuable collection of Egyptian antiquities, just arrived at Leghorn, for the museum at Paris, Champollion was appointed to proceed to Italy for the purpose of examining and valuing them. On his return to Paris, he was named Director of the Egyptian Museum at the Louvre, of which he published a description. In 1828 the King of France appointed a scientific expedition to proceed to Egypt, to examine the monuments of that country under Champollion's direction. At the same time the Grand Duke of Tuscany, Leopold II., appointed a similar expedition for the same object, at the head of which he placed Rosellini, Champollion's friend. The two expeditions sailed together from Toulon, and arrived at Alexandria, August 1828. Champollion remained in Egypt till the end of 1829, when he returned to France. It was agreed between the French and Tuscan governments that the result of the observations of the two expeditions should be published in one work, in French and Italian, under the direction of Champollion and Rosellini. The work began to appear in parts in 1832. In the letter-press accompanying this publication Rosellini has not only adopted the general system of Champollion, but has carried it much farther. While Champollion was preparing the first part of the new work for the press, he died at Paris on the 5th March, 1832.

Champollion's merits as a laborious student of Egyptian archæology, are undeniable; but his judgment was not sound, his deductions from his premises not always correct, and his learning (except on Egyptian antiquities) neither extensive nor exact. He corrected Dr. Young's first rude notions as to the phonetic symbols, and considerably extended the number of known signs. For the controversy concerning the general application of the phonetic alphabet, see vol. ii. of the 'Egyptian Antiquities,' in the 'Library of Entertaining Knowledge,' c. x., on the 'Rosetta Stone.'

CHANCE. This word has been used in two senses, as opposed to Providence, and as opposed to Certainty. For the theory of chances, in the latter sense, see PROBABILITIES, THEORY OF.

CHANCE-MEDLEY, in English law, is a corruption of chaudemellé, a term used in old French legal phraseology, and in the barbarous Latin of ancient ordinances translated *calida mellela*. The term in French law denoted, consistently with its etymology, a casual affray or broil, accompanied with violence, but without deliberation or preconceived malice. In English law, it can hardly be doubted that Chance-medley originally meant the same thing; but in modern times the expression is limited to the killing of another in self-defence upon a sudden and unpremeditated encounter. There is often much difficulty in distinguishing homicide by chance-medley, which, though an offence by law, is excusable on the ground of self-defence, from manslaughter. The general distinction is, that, if both parties are actually fighting, he who gives the mortal stroke is guilty of manslaughter; but if one of them at first refuses to fight, and, on being closely pressed, retreats as far as he can, and, at last, in order to avoid his own destruction, kills his antagonist, this is homicide excusable on the ground of self-defence, or, as it is inaccurately called, chance-medley. (Foster's *Crown Law*, pp. 275, 276, and tit. 'Homicide.')

CHANCEL is a term now used to denote that part of a church in which the communion-table or altar is placed, with the area before it in which the congregation assemble when the Eucharist is administered. The chancel was often separated from the nave, or body of the church, by lattice-work, *cancelli*, and it was from this circumstance that the term chancel seems to have originated. In some churches we may hear of the chancel of a particular family, where such family has had a private oratory within the church, and which has usually been also the burial-place of the family. These private chapels or chantries are sometimes called chancels, likewise, in consequence of being divided from the rest of the church by *cancelli*.

CHANCELLOR (in Latin, *Cancellárius*). The primary meaning of cancellarius is 'qui ad cancellos assistit,' one who is stationed at the lattice-work of a window or door-way, to introduce visitors, &c. A cancellarius in this sense was no more than a door-keeper. In another sense, cancellarius was a kind of legal scribe, so called also from his position at the cancelli of the courts of law. The cancellarius, under the later emperors, and in the Constantinopolitan court, was a chief scribe or secretary, who was ultimately invested with judicial powers and a general superintendence over the rest of the officers of the emperor.

All the modern nations of Europe have or have had chancellors, though the powers and duties seem to have varied in each.

In England the Chancellor was originally the king's chief secretary, to whom petitions were referred, by whom patents and grants from the crown were approved and completed, and by whom reports upon such matters were, if necessary, made to the king; hence he was sometimes styled Referendarius. This term occurs in a charter of Ethelbert, A.D. 605. The name chancellor, it is said, first occurs in the history of England in the time of Edward the Elder, about A.D. 920.

In early times, as the Chancellor was usually an ecclesiastic, he became keeper of the king's conscience, examiner of his patents, the officer by whom prerogative writs were prepared, and keeper of the great seal. The last ecclesiastic who exercised the office was John Williams, archbishop of York, who was keeper from July 10, 1621, to November 1, 1625.

The interference of the king, as the source of justice, was frequently sought against the decisions of the courts of law; and also in matters which were not cognisable in the ordinary courts, or in which, from the maintenance or protection afforded to his adversary, the petitioner was unable to obtain redress. The jurisdiction with which the English Chancellor is invested had its origin in this portion of discretionary power, which was retained by the king on the establishment of courts of justice. ('Legal Judicature in Chancery stated,' p. 27, et seq.)

The style of the Chancellor in England is Lord High Chancellor of Great Britain. He takes rank above all dukes not of the blood royal, and next to the Archbishop of Canterbury. He is appointed by the delivery of the great seal into his custody, though there are instances of his having been appointed by patent. The resumption of the great seal by the king determines his office. By virtue of his office he is the king's principal adviser in matters of law, and a privy councillor, speaker and prolocutor of the House of Lords, chief judge in the Court of Chancery, and the head of the profession of the law; visitor in the king's right of all hospitals and colleges of royal foundation; and patron of all crown livings under the value of 20*l.* a year, according to the valuation made in the reign of Henry VIII., and confirmed in that of Elizabeth. [Benefice, col. 168.] He appoints and removes all justices of the peace. He issues writs for summoning parliaments, and transacts all business connected with the custody and use of the great seal. To him was intrusted the care of infants and their property upon the dissolution of the court of wards and liveries; and he has the jurisdiction over idiots and lunatics by special delegation from the crown. He also exercises a special jurisdiction, conferred upon him by various statutes, as original and appellate judge, as to charitable uses, friendly societies, infant, lunatic, and idiot trustees, in certain appeals from the court of review, in bankruptcy, and in many other cases. He has concurrent jurisdiction with the other judges of the superior courts with respect to writs of habeas corpus.

The authority of Lord Chancellor and Lord Keeper are made the same by the stat. 5 Eliz. c. 18. The great seal is sometimes put into commission during the temporary vacancy of the office, or the sickness of the Chancellor, the seal being intrusted to the chief commissioner. (1 Will. and M. c. 21.) The Chancellor has a seat in the cabinet. He resigns office with the party to which he is attached.

By 3 & 4 Will. IV. c. 111, s. 3, the crown is empowered to grant an annuity of 5000*l.* a year to the Lord Chancellor or Lord Keeper on his resignation of office. The salary of the Lord Chancellor is 10,000*l.* a year, and is paid out of the Suitors' Fee Fund. He has besides a salary as Speaker of the House of Lords. There is also a Lord High Chancellor of Ireland, whose authority within his own jurisdiction is in most respects the same as that of the Lord High Chancellor of Great Britain. The salary of the Irish Chancellor, (paid out of the Consolidated Fund,) is 8000*l.* a year. His retiring pension is 3692*l.* a year.

The *Chancellor of a Diocese* or *of a Bishop* is Vicar-general to the bishop, holds his courts, and assists him in matters of ecclesiastical law. He has a freehold in his office, and he is not necessarily an ecclesiastic; but if he is a layman, or married, he must be a Doctor of Civil Law. (37 Hen. VIII. c. 17.)

The *Chancellor of a Cathedral* is an officer who superintends the religious services.

The *Chancellor of the Duchy of Lancaster* presides either in person or by deputy in the court of the Duchy of Lancaster concerning all matters of equity relating to lands holden of the king in right of the Duchy of Lancaster. His salary is 2000*l.* a year, and that of the Vice [illegible] is 600*l.* The Vice-Chancellor holds [illegible] in Westminster and in Lancashire.

The *Chancellors of the Universities of Oxford and Cambridge* are elected by the respective corporate bodies of which they are the heads. In both these universities the duties of the Chancellor are in nearly all cases discharged by a Vice-Chancellor.

The *Chancellor of the Exchequer* is under-treasurer, and holds the seal of the Exchequer. The office of Lord High Treasurer is now executed by the Lords Commissioners of the Treasury. The Chancellor of the Exchequer is the principal finance minister of the crown: the office is sometimes held by the Prime Minister when he is a member of the House of Commons. The legal functions

of the Chancellor of the Exchequer are now merely formal. [EXCHEQUER.] All the legal business is transacted by the Barons of the Exchequer.

The *Chancellor of the Order of the Garter* and other orders of knighthood seals and authenticates the formal instruments of the chapter, and keeps the register of the order.

CHANCELLOR OF SCOTLAND. As in England, the Chancellor of Scotland was always a high officer of the crown, and had great influence with the king and authority in his councils. As in England too, that authority at length extended itself beyond its former limits, and affected the whole judicial power of the kingdom. Its operation and effect in the two countries however were different; for, while in England the Chancellor only carved out for himself a jurisdiction in equity, in Scotland he reached the head of the administration of justice, and sat in a court which dispensed both equity and common law, and the course of proceeding in which all the other judicatures of the realm were bound to follow.

By art. 24 of the Treaty of Union, it was provided that there should in future be but one great seal for the United Kingdom, and that a seal should be kept and used in Scotland for such private rights or grants as had usually passed the great seal of Scotland. The office of Chancellor of Scotland then properly expired, and none have been appointed to it since the Earl of Seafield, who was Chancellor at the time of the Union.

CHANCERY (*Cancellaria*). The term is derived from Chancellor, *Cancellarius*, and signifies the court where that judge exercises his functions. The court in which the Lord High Chancellor's judicial functions are exercised is called the High Court of Chancery.

The principal part of the business of the Court of Chancery consists in the administration of equity. The Court of Exchequer had a similar jurisdiction, which was abolished by 5 Vict. c. 5. [EQUITY.] The Lord Chancellor, the three Vice-Chancellors, and the Master of the Rolls are the judges by whom equity is administered. Each of them has a separate court. In term-time they sit in Westminster Hall; in vacation, the Chancellor and Vice-Chancellors sit in Lincoln's Inn, and the Master of the Rolls at the Rolls Court, in Chancery Lane.

The Master of the Rolls is appointed by the crown by letters patent, and holds his office during good behaviour. He has the power of hearing and determining originally the same matters as the Lord Chancellor, excepting cases in lunacy and bankruptcy; orders and decrees pronounced by the Master of the Rolls are good and valid, but they must be signed by the Lord Chancellor before they are enrolled, and they are subject to be reversed by the Chancellor. The Master of the Rolls has precedence next to the Lord Chief Justice of the King's Bench. The salary is 7000*l.* a year under 1 Vict. c. 46. The Master of the Rolls in Ireland has 3969*l.* a year under 4 Geo. IV. c. 61.

The office of Vice-Chancellor was created by 53 Geo. III. c. 24. This officer (who, in Chancery, takes precedence next to the Master of the Rolls) is appointed by the crown by letters patent, and holds his office during good behaviour. Rank and precedence are given him by 5 Vict. c. 5 next after the Lord Chief Baron of the Exchequer. He has power to hear and determine all matters depending in the Court of Chancery. All orders and decrees of the Vice-Chancellor are valid, but subject to be altered or reversed by the Chancellor; and they must be signed by the Lord Chancellor before they can be enrolled. The salary is 6000*l.* a year, granted by 2 & 3 Will. IV. c. 116. On the next appointment of a Vice-Chancellor, under 53 Geo. III. c. 24, the salary will be 5000*l.*, with a retiring pension of 3500*l.* Since the appointment of two additional Vice-Chancellors by 5 Vict. c. 5, he is styled the Vice-Chancellor of England.

The salaries of the new Vice-Chancellors are 5000*l.* a year each, paid out of the interest arising from the Suitors' Fund. After fifteen years' service, or when incapacitated for the duties of office by infirmity, a pension not exceeding 3500*l.* a year may be granted to each Vice-Chancellor.

An appeal (which, strictly speaking, is nothing more than a re-hearing of the cause) may be made from any decision of the Master of the Rolls or the Vice-Chancellors to the Lord Chancellor. The appeal from the decree of the Lord Chancellor is to the House of Lords.

There are officers of the Court of Chancery by whom certain parts of the equitable jurisdiction are exercised. These officers derive all their authority from special delegation by one of the judges in Chancery. The principal of these officers are the Masters in Ordinary and the Accountant-General. The Masters in Ordinary are eleven in number, besides the Master of the Rolls, who is the chief of them, and the Accountant-General. The number of Masters was increased from ten to eleven when the equity jurisdiction of the Court of Exchequer was abolished by 5 Vict. c. 5. They are now appointed by the crown, and hold office during good behaviour. (3 & 4 Wm. IV. c. 94.) The salary is 2500*l.* a year. It is the duty of the Masters to execute the orders of the court upon references made to them, whether in exercise of its original jurisdiction or under the authority of an act of parliament, and to make reports in writing upon the matters that are referred to them. The Master's reports must be confirmed by the court.

The *Accountant-General* is an officer created by the stat. 12 Geo. I. c. 32, which also regulates his duties. [ACCOUNTANT-GENERAL.]

The proceedings in the Court of Chancery are conducted by Bill and Answer. But besides the jurisdiction, of which a sketch has been given above, a summary jurisdiction, upon petition only, has been given to courts of equity in certain cases by acts of parliament. The principal cases in which this summary jurisdiction has been granted are those where trustees or mortgagees die without heirs or leaving infant heirs, or where trustees are out of the jurisdiction, or refuse to convey property to the persons beneficially entitled to it.

The stat. 52 Geo. III. c. 101 gives the court a summary jurisdiction in cases of abuse of charitable trusts. The court also appoints guardians for infants upon petition merely.

The jurisdiction exercised in Chancery over *infants* and *charities* is partly derived from the general equity jurisdiction, and partly from acts of parliament. (As to the origin of the jurisdiction over infants, see Coke upon Litt., by Hargrave, 88 b. n. 16; 2 Fonbl. *on Eq.*, p. 226, 232.)

The jurisdiction over infants is exercised principally in directing *maintenance* to be given them out of the property which they will enjoy on attaining their full age; in appointing and controlling *guardians* of them; and in providing suitable *marriages* for them.

A distinct part of the business in Chancery, though but a small part, arises from what is called *the common-law jurisdiction of the Court of Chancery.*

In actions depending in the Court of Chancery by virtue of its common law jurisdiction, the court has no power to try issues of fact. For this purpose the record of the pleadings must be delivered to the Court of King's Bench, and that court will have the issues tried by jury, and give judgment in the actions.

To the common law jurisdiction of the Court of Chancery belongs the power of issuing certain *writs*; particularly the writ of *habeas corpus*, and the writs of *certiorari* and *prohibition*, for restraining inferior courts of justice from assuming unlawful authority. (1 Madd. *Chanc.* 17, &c.)

The place where the common-law jurisdiction of the Court of Chancery is exercised is the *petty bag office*, which is kept solely for this purpose. The Court of Chancery, in respect of its common-law jurisdiction, is said to be a *court of record*, which, as a court of equity, it is not. (*Gloss.* 3 Bl. *Com.* 24.)

The principle of the High Court of Chancery in England has led to the establishment of courts of equity in the British dominions and dependencies. Some of these are called Courts of Chancery. In each of the counties palatine of Lancaster and Durham, and also in Ireland, there is a court so named, which dispenses the same equity within the limits of its jurisdiction, as the High Court of Chancery. By 6 & 7 Wm. IV. c. 19, the palatine jurisdiction of Durham was separated from the bishopric and vested in the king, but the courts were expressly reserved. In the Irish Court of Chancery the Lord Chancellor for Ireland presides. There is also a Rolls Court in Ireland. From these courts the appeal is immediately to the House of Lords.

In most of our colonies there are Courts of Chancery. (Howard's 'Laws of the Colonies.') From the colonial courts an appeal now lies to 'the judicial committee of the Privy Council.' (Stat. 2 & 3 Wm. IV. c. 92.)

There are Chancery Courts in some of the states which compose the North American Union.

CHANCERY, INNS OF. [INNS OF COURT.]

CHANDLER, DR. RICHARD, was born at Elson, in Hampshire, in 1738, studied at Winchester School, and afterwards entered Queen's College, Oxford, in May 1755. Soon after he took his bachelor's degree in 1759 he published 'Elegiaca Græca,' containing the fragments of Tyrtæus, Simonides, Meleager, Alcæus, &c., with notes. In 1763 he edited the splendid work; 'Marmora Oxoniensia.' [ARUNDEL MARBLES.] In 1764 he was sent by the Dilettanti Society to travel into Asia Minor and Greece, in company with Revett the architect, and Pars the painter. They spent more than a year in Asia Minor, and in 1765 they proceeded to Athens, and passed another year in examining Attica and the Peloponnesus. They returned to England in November, 1766. The result of their labours, the 'Ionian Antiquities, or Ruins of Magnificent and Famous Buildings in Ionia,' 2 vols. fol., was published in London, in 1769. In 1774 Chandler published 'Inscriptiones Antiquæ pleræque nondum editæ in Asia Minori et Græcia, præsertim Athenis, collectæ,' fol., Oxford. His 'Travels in Asia Minor,' 4to., 1775, and 'Travels in Greece,' 4to., 1776, still rank among the best descriptions of those countries. There is a French translation (Paris, 1806) of the Travels in Asia Minor and in Greece, with notes, by J. P. Servois and Barbie du Bocage. These two works have been since republished together, by the Rev. R. Churton, with Revett's remarks, and a biography of Dr. Chandler, 2 vols. 8vo., 1835. In 1773 Chandler took the degree of D.D.; and in 1779 he obtained the living of East Worldham and West Tisted, Hants. In 1785 he married, and afterwards travelled in Switzerland and Italy. In 1800 he was made rector of Tylehurst, in Berkshire. Dr. Chandler died in February 1810. He left in MS. 'The Life of William Waynflete, Bishop of Winchester, Lord High Chancellor of England in the reign of Henry VI., and Founder of Magdalen College,' which was published in 8vo., London, 1811.

CHANNING, WILLIAM ELLERY, D.D., was born at Newport, Rhode Island, in 1780 or 1781. He was educated at Harvard College, and in 1803 he was appointed to the office in which he remained for the rest of his life, that of pastor of the Federal Street congregation in Boston. His preaching early drew attention by its superior polish and eloquence; but what first brought him into general notice in his own country were several sermons which he published during the war of 1812. In England Dr. Channing's name was not much heard of till after the appearance of his 'Remarks on the Character and Writings of John Milton,' originally published in the form of a review of the 'Treatise of Christian Doctrine,' in the 'Christian Examiner' for 1826. In the same publication for 1829 appeared his 'Remarks on the Life and Character of Napoleon Bonaparte,' as a review of Scott's Life of Napoleon. Dr. Channing produced many other works, the most complete collection of which, we believe, is the one published at Glasgow, in 6 vols. 8vo., of which the first five were brought out in 1840, with the sanction and assistance of Dr. Channing himself, and the sixth in 1844, under the authority of his son, Mr. W. F. Channing. His death took place at Burlington, Vermont, Oct. 2, 1842.

CHANTENAI. [LOIRE-INFÉRIEURE.]

CHANTILLY. [OISE.]

CHANTREY, SIR FRANCIS, was born April 7, 1782, at Norton, in Derbyshire, where

his father was a farmer. Chantrey was first apprenticed for three years to a carver in Sheffield. He afterwards turned his attention to modelling in clay; and he tried his fortune as a modeller, first in Dublin, then in Edinburgh, and lastly in London. In London, Nollekens was greatly instrumental in promoting Chantrey's fortunes, and recommended him upon all occasions when a bust was required. Chantrey, however, having once found the opportunity of making himself known, required thenceforth no other recommendation than his busts to ensure himself full employment in that department of art. In 1816 he was chosen an Associate, and in 1818 a Member, of the Royal Academy. In the following year, 1819, he paid his first visit to Italy, where he was elected a member of the academies of Rome and Florence. He died Nov. 25, 1841, and was buried in a vault constructed by himself in his native parish of Norton, to which he was a benefactor by his will.

In the career of a uniformly successful artist there are few incidents to record. Chantrey's career for the last twenty years of his life, as a monumental sculptor, was unrivalled. He was knighted by the queen in 1837, at which period he was already a sufferer from disease of the heart, and from this time he finished few works himself; their completion was intrusted to his able assistant Mr. Weekes. Of his poetic sculptures, which are not many, few were executed from his own designs: the statue of Lady Louisa Russell, daughter of the late duke of Bedford, at Woburn Abbey, and the Sleeping Children, in the Cathedral of Lichfield, his best sepulchral monument, were both executed from the designs of Stothard. As a monumental sculptor Chantrey will rank high: some of his statues in this branch of art are among the finest specimens of their class. One of his very best works is the bronze statue of William Pitt, in Hanover Square, London. His last work of the equestrian class, the Wellington testimonial, now placed before the Royal Exchange, London, was executed nearly entirely by Mr. Weekes.

Chantrey had no children or very near relations, and he left the reversion of a portion of his property, at the death or second marriage of his wife, to the disposal, under certain restrictions, of the president and council of the Royal Academy of Arts in London, for the promotion of British Fine Art in painting and sculpture, and for establishing a 'Public National Collection of British Fine Art in Painting and Sculpture,' executed within the shores of Great Britain. He also left handsome legacies to his friends and assistants Allan Cunningham and Mr. Weekes.

CHANTRY (*Cantaria* in the middle-age Latin), a private religious foundation, of which there were many in England before the Reformation, established for the purpose of keeping up a perpetual succession of prayers for the prosperity of some particular family while living, and the repose of the souls of those members of it who were deceased, but especially of the founder and other persons named by him in the instrument of foundation. The French word Oratoire appears to correspond to chantry.

Chantries were usually founded in churches already existing; sometimes in the churches of the monasteries, sometimes in the great cathedral or conventual churches, but very frequently in the common parish church. All that was wanted was an altar with a little area before it and a few appendages. It was not unusual to have four, five, or six different chantries in a common parish church: in the great churches, such as old St. Paul's in London, the Minster at York, and other ecclesiastical edifices of that class, there were at the time of the Reformation thirty, forty, or fifty such foundations. Chantries were generally erected in the style of architecture which prevailed at the time, and not in accommodation to the style of the original fabric.

When chapels were erected for the especial purpose of the chantries, they were usually also the places of interment of the founder and his family, whence we sometimes find such chapels belonging to particular families, and adorned with monuments of many generations. One of the most beautiful chapels of this kind is in the little village of Sandal, a few miles from Doncaster, the foundation of Rokeby, archbishop of Dublin, who died in 1521. The Beauchamp Chapel at Warwick contains the very fine monument and effigy of Richard de Beauchamp, earl of Warwick, who died in 1439.

Sometimes chantries were established in edifices remote from any church, a chapel being erected for the express purpose.

In chantries of royal foundation, or in chantries founded by the more eminent prelates or barons, the service was conducted sometimes by more than one person. But usually there was only one officiating priest. The foundation deeds generally contain a specification of his duties, which consisted for the most part in the repetition of certain masses; but sometimes the instruction of youth in grammar or singing, and the delivering pious discourses to the people, made part of the duty of the chantry priest. They also contain an account of the land settled by the founder for the support of the priest.

In many towns and country places there are ancient houses called chantry houses, or sometimes chantries, or colleges, which were formerly the residence of the chantry priests, and when called colleges they were the places where they lived a kind of collegiate life. These, as well as all other property given for the support of the chantry priests, were seized by the crown and sold to private persons, when, by an act passed in the first year of King Edward VI. cap. 14, all foundations of this kind were absolutely suppressed and their revenues given to the king. The act of Edward VI. gave the king all the colleges, free chapels, chantries, hospitals, fraternities or guilds, which were not in the actual possession of King Henry VIII. King Edward founded a considerable number of grammar-schools, and the endowments were for the most part out of tithes formerly belonging to religious houses, or out of chantry lands given to the king in the first year of his reign. These schools are now generally called King Edward VI.'s Free Grammar-Schools; and many of them, such as Birmingham for instance,

are now well endowed in consequence of the improved value of their lands.

(Strype, *Ecclesiastical Memoirs*, ii. 101—103, ii. 423, iii. 222, vi. 495.)

CHAPEL (in French, *chapelle;* in Latin, *capella*), a word common to many of the languages of modern Europe, and used to designate an edifice of the lower rank appropriated to religious worship.

In England there is a great number of rural ecclesiastical edifices, especially in the north of England, where the parishes are large, which are not, properly speaking, churches, though they are sometimes so called, but are chapels, and not unfrequently called parochial chapels. In the parish of Halifax there are twelve of these chapels, all founded before the Reformation. In the parish of Manchester, and in most of the parishes of Lancashire, such subsidiary foundations are numerous. Those foundations of this class which could be brought within the description of superstitious foundations were dissolved by the act of 1 Edward VI. for the suppression of chantries; but it not unfrequently happened that the building itself continued to be used for religious worship in its reformed state, and remains to this day a place of Christian worship, the incumbent being supported by the casual endowments of the period since the Reformation, and especially by Queen Anne's Bounty, in which most of the incumbents of chapels of this class have participated.

The term chapel is used to designate those more private places for the celebration of religious ordinances in the castles or dwelling-houses of persons of rank. Most of the baronial residences, it is probable, had chapels of this kind. How splendid they sometimes were, we may see in St. George's Chapel at Windsor.

There are also chapels in the colleges of Oxford and Cambridge, and in hospitals and other similar foundations.

Places of worship of modern foundation, especially those in towns, are called chapels-of-ease, being erected for the ease and convenience of the inhabitants when they have become too numerous for the limits of their parish church. Most of these are founded under special acts of parliament. [BENEFICE.]

The word chapel is generally used to denote the places of worship erected by various sects of Dissenters under the Act of Toleration, though the Quakers, and some of the more rigid Dissenters of other denominations, call such edifices by the name of meeting-houses. The name chapel is now also generally given, by Protestants at least, to the Roman Catholic places of worship.

CHAPEL-EN-LE-FRITH. [DERBYSHIRE.]

CHAPELLE-ST.-DENIS. [SEINE.]

CHAPLAIN (*capellanus*, a word formed from the middle Latin, *capella*, chapel). A chaplain is properly a clergyman officiating in a chapel, in contradistinction to one who is the incumbent of a parish church. But it now generally designates clergymen who are either residing in families of distinction, and actually performing religious services in the family; or who are supposed to be so, though not actually so engaged. The 21 Henry VIII. limited the number of chaplains which noblemen and other persons may nominate.

The Speaker of the House of Commons appoints his chaplain, who reads prayers daily at the House before business commences. In the House of Lords prayers are read by the bishop last raised to the episcopal bench.

A chaplain is appointed to each of her Majesty's ships when in active service. In the army it is not necessary to appoint a chaplain to each regiment, but there are a few clergymen appointed for the army under the name of chaplains to the forces.

The magistrates in quarter-sessions are required by 4 Geo. IV. c. 64, to appoint a chaplain to every prison within their jurisdiction. A chaplain to a prison must be a clergyman of the Church of England, and be licensed by the bishop before he can officiate. His duties are pointed out by the above act, and among other things he is required to keep a journal. The duties of chaplains in gaols are further regulated by 2 & 3 Vict. c. 56. The reports of chaplains are sometimes of great interest, and throw light upon the causes of crime.

Chaplains are required to be appointed to every County Lunatic Asylum.

The Poor Law Amendment Act (4 & 5 Will. IV. c. 76) empowers the Poor Law Commissioners to appoint paid officers of parishes and unions; and this includes chaplains. The guardians may appoint a dissenting minister. Both in gaols and union workhouses licensed dissenting ministers are allowed to visit the inmates of their respective persuasions at reasonable times and under certain restrictions.

CHAPMAN, GEORGE, the earliest English translator of Homer, and known also as a prolific writer of dramas, was born in the year 1557. His birth-place is uncertain, and little is positively known of the events of his life. It is said, however, that he studied at Oxford. He resided at London, as an esteemed member of the best literary society, associating with Spenser, with Daniel, and with Shakspere, who was six or seven years his junior; and he held some place about court. His personal character appears to have been [illegible] respectable and amiable. He died in London on the 12th May, 1634, and was buried [illegible] churchyard of St. Giles-in-the-Fields, [illegible] friend Inigo Jones erected a monument to [illegible] memory.

Chapman's published writings were [illegible] Among his non-dramatic productions, the most valuable, as well as ambitious, was his translation of Homer into English fourteen-syllable verse: 'The Iliads of Homer, Prince of Poets, never before in any language truly translated, with a comment upon some of his chief places, done according to the Greek, by George Chapman,' London, 1603. Of this work a reprint has been published with introduction and notes, by Dr. W. Cooke Taylor, London, 1843, 2 vols. cr. 8vo. The Odyssey, similarly translated, appeared in 1614, and was followed in the same year by the 'Battle of the Frogs and Mice,' and the Homeric Hymns and Epigrams. He was the author of many

other works, most of them poetical, and of nineteen dramas. Chapman's dramas, though works of much significance in the history of our old literature, are not the most valuable of his works. In comedy, Chapman adapts himself readily, and not without success, to the style of the school which had been formed by his juniors, especially Jonson and Fletcher. In his tragic dramas he attempts at once to gratify the taste of his age and nation for the direct and vivid representation of dramatic horrors, and to maintain that tone of narrative declamation and of didactic reflection which Seneca had taught him, and to which his cast of mind made him naturally prone. But Chapman's memory is best preserved, and his reputation as a poetical imaginer and thinker most fully vindicated, by his free translations from the Greek, and especially by his spirited and vigorous version of the Iliad. Its late republication is a judicious tribute to the improved taste of our time in poetical literature.

CHAPPE, CLAUDE, was born at Brulon, in Normandy, in 1763. It is said by his French biographers that, happening on some occasion in his youth to be separated from his friends, he conceived the idea of corresponding with them by means of signals, and that the result of his efforts to attain this end was the invention of the machine which he called a telegraph or a semaphore. Though inventions for a similar purpose had been previously suggested, as by Dr. Hook in England, and Amontons, in his own country, it is uncertain whether M. Chappe was acquainted with them, and no doubt can exist that he is justly entitled to the honour of having invented both a particular system of signals, and the mechanism by which the operations are performed. This machine consisted of a vertical pillar of wood, at the top of which was a transverse beam eleven or twelve feet long, and at each extremity of the beam was a secondary arm, all being capable of adjustment to the pillar, and to each other at any angle, and thus indicating letters of the alphabet or conventional signs. The invention was adopted by the French Legislative Assembly in 1792, and in an experiment as to its efficacy was found to be able to convey a message from Paris through all the intermediate stages to Lisle, a distance of 48 leagues, in 13 minutes 40 seconds. With some modifications it was soon afterwards adopted in this country, and was till very recently to be seen in use on the roof of the Admiralty. It is now altogether superseded in England, and probably in France, by the electric telegraph. M. Chappe's claim to the originality of the invention having been contested, and some invidious attacks made on its imperfections by some of his contemporaries, he fell into a profound melancholy, which terminated his life in 1805.

CHAPPE D'AUTEROCHE, JEAN, born 1722 (1728, Delambre), died 1769, in California, whither he had gone to observe the transit of Venus. He succeeded Lacaille at the observatory of Paris, as assistant to Cassini de Thury, and published Halley's Tables, in 1754. For his travels to Siberia and to California, &c., see Delambre's *Hist. d'Astron. XVIII. Siècle.*

CHAPTAL, JEAN ANTOINE, was born at Nosaret, in the department of Lozère, June 5, 1756. He studied at Mende, and afterwards at Rhodez, whence he repaired to Montpellier, and afterwards to Paris. In 1781 he was appointed to the chair of chemistry, founded by the states of Languedoc at Montpellier on purpose for him. Inheriting a large fortune from his uncle, he established some important chemical manufactories in Montpellier, and thus bestowed upon France several valuable products which were previously obtained from foreigners. In 1793 Chaptal was called to the capital by the Committee of Public Safety, to manage the manufactory of salt-petre, which substance could no longer be obtained from abroad, and the want of which was pressing. He was one of the first professors of the Polytechnic School, and in 1798 was elected a member of the Institute. On the establishment of the consulate, Napoleon called him to the Council of State. In the year 9 (1801) he appointed him Minister of the Interior, and in 1804 Bonaparte made him a senator, and soon afterwards appointed him Treasurer of the Senate. Some time afterwards he was raised to the dignity of Comte, and in 1819 he was called up to the Chamber of Peers. While he was in office, he established chambers of commerce, and consulting councils of arts and manufactures; the School of Arts and the Conservatory at Paris are monuments of his enlightened solicitude for increasing the opportunities and means of instruction. He published useful processes, visited the manufactories, conversed with the workmen, offered them his advice, applauded their discoveries, and encouraged the importation of processes and apparatus from abroad. In fact, during the whole course of his active life, he extended his views and his care to every substance and circumstance which he considered favourable to the improvement of arts and manufactures. He died at Paris July 29, 1832, in the 76th year of his age.

Chaptal's principal works are: 'Elémens de Chimie,' 4 vols. 8vo., 1790; 'Essai sur le Perfectionnement des Arts Chimiques en France,' 8vo., 1800; 'Art de faire les Vins,' 8vo., 1801; 'Traité Théorique et Pratique sur la Culture de la Vigne,' 2 vols. 8vo., 1801; 'Art du Teinturier et du Dégraisseur,' 8vo., 1800; 'Essai sur le Blanchiment,' 8vo., 1801; 'Chimie appliquée aux Arts,' 4 vols. 8vo., 1807; 'Art de la Teinture du Coton en Rouge,' 8vo., 1807; 'De l'Industrie Française,' 2 vols. 8vo., 1819; 'Mémoire sur le Sucre de Betteraves,' 8vo., 1815; 'Chimie appliquée à l'Agriculture,' 2 vols. 8vo., 1823.

(Thénard, *Eloge*, in *Memoires de l'Acad. des Sciences; Biographie des Contemporains.*)

CHAPTER. The canons in the cathedral or conventual churches, when assembled, form what is called the chapter, *capitulum;* anciently the council of the bishop. Other religious communities, when assembled for business, sat in *chapter.* Attached to many cathedral and conventual churches are buildings for the meeting of the chapter, called chapter-houses. The buildings of this kind connected with the churches of West-

minster and York are octagonal, and of singular beauty.

The members of the College of Arms, that is, the king's heralds and pursuivants, are said to hold a *chapter* when they confer on the business of their office; and in like manner chapters of the order of the Garter are held.

CHAPTER-HOUSE. [CHAPTER.]

CHARA'CEÆ, a curious group of plants inhabiting pools and slow streams, to which they communicate a nauseous offensive odour, which is said to become a pestilential miasma, when, as in the Campagna of Rome, the plants are in great numbers. They are highly interesting on account of the facility with which they exhibit the circulation of their fluids, and because of the light they thus appear to throw upon some of the more obscure of the phenomena of vegetable life. If one of the tubes of a *chara* be observed under a pretty good microscope, by the aid of transmitted light, the fluid it contains will be distinctly seen to have a motion up one side of each tube, down the other, and then up again, after the manner of a jack-chain, and this goes on continually as long as the plant remains alive.

CHARACTERISTIC (of a Logarithm), the whole number, position, or negative, which precedes the decimal point of a logarithm. The reason of this number having a separate name is, that in Briggs's system it is so easily found as not to form a part of the tables. [LOGARITHM.]

CHARADE, a species of riddle, in which a word consisting of several syllables is indicated, first by an enigmatical description of each syllable, taken separately, and then by a similar description of the whole. To have any thing of wit or point, a charade should be so contrived, that the ideas employed to denote or suggest the several syllables, and the entire word, shall be all in some way connected together, or arise naturally the one out of the other.

CHARÆ'AS, a genus of Moths of the family *Noctuidæ*, of which five species have been found in England. The larvæ are naked, feed upon roots, and assume the pupa state under ground. The caterpillar of one species, *Ch. Graminis*, feeds upon the roots of grasses, and in Sweden is extremely destructive to the pastures. In England it is not so abundant; but an instance is given in the 'Entomol. Mag.' (vol. ii.) of its ravages in the north of England.

CHARCOAL is the impure carbon obtained by the decomposition of vegetable matter by heat without free access of air. During this operation the more volatile elements of the woody fibre are expelled as new compounds, while the carbon, the fixed ingredient, remains, mixed however with some saline matter.

The making of charcoal for domestic uses, and probably also for such manufacturing or metallurgic processes as the ancients were acquainted with, is of high antiquity. As now conducted, charcoal is prepared by two different methods. One is that of piling the wood in a heap, which is covered with turfs and sand, to allow of the entrance of such a portion only of atmospheric air as is sufficient to carry on the imperfect combustion required. The heap is fired at several holes left near the bottom, and a draught of air is obtained by at first leaving an orifice at the top of the heap; this is afterwards covered, and, when it is found that the flame has pervaded the heap entirely, the bottom holes are also closed. In the other method, the wood is put into iron cylinders, which are set in brick-work, and surrounded by fire; the wood in the cylinders has no communication with the external air, and they have only a small opening to allow of the escape of the residual products, which consists chiefly of water, pyroligneous acid, creosote, pyroxylic spirit, and empyreumatic oil. The chemical and mechanical properties of charcoal are noticed under CARBON.

CHARCOAL, ANIMAL. When bones are heated in iron cylinders, the produce is *ivory-black*, or animal charcoal, which is largely used as a pigment, and in refining sugar.

CHARD-BEET. [BETA.]

CHARDIN, SIR JOHN, was born at Paris, in November 1643. His father was a Protestant, and a jeweller in the French capital, and brought up his son to the same profession. As soon however as Chardin was of age, in order to gratify his taste for travelling, and 'to endeavour the advancement of his fortunes and estate,' he left France for the East. During his first journey, which lasted from 1664 to 1670, he visited Persia and the East Indies, and, after a return to Europe for a short time, again departed for Persia, at the end of 1671, by the route of Constantinople, the Black Sea, and Armenia. He arrived at Ispahan in June 1673, and remained in Persia till 1677. Few travellers have been so conscientious and pains-taking, or have had such good opportunities of acquainting themselves with the country and the manners and customs of Persia. He spoke the language like a native, he knew Ispahan better than Paris, and he visited nearly every part of the country, traversing, he says, 'the whole length and breadth thereof.'

In April 1681, he came to London, where he settled, was knighted by Charles II., and married to a young lady. He was elected a fellow of the Royal Society, which had recently been established, and contributed some papers to the earliest numbers of the Transactions of that society. In 1686 he published the first part of his 'Travels,' containing his journey from Paris to Ispahan, in one vol. fol.; and in 1711 appeared the second part of his Travels. According to an entry in the church books, he was buried at Chiswick, on Dec. 29, 1713. His travels have been translated into various languages, and often reprinted. Some notes written by Chardin in India to illustrate passages in the Scriptures by a comparison of modern eastern usages, and which had been lost for sixty years, were recovered and incorporated in Mr. Harmer's 'Observations on divers passages of Scripture, illustrated by books of travels,' &c.

CHARENTE, a department in France, consisting of the former province of Angoumois and portions of Saintonge, Limousin, and Poitou, is bounded N. by the departments of Deux-Sèvres and Haute-Vienne, E. by those of Vienne and Dordogne, S. and W. by those of Dordogne and

Charente-Inférieure. It lies between 45° 12′ and 46° 7′ N. lat., and between 0° 50′ E. long. and 0° 30′ W. long. From N.E. to S.W. it measures about 75 miles, and the average breadth is about 35 miles. The area is 2329 square miles. The population in 1841 was 367,893, which gives an average of 157.9 to the square mile, being 10 under the average per square mile for all France.

The department presents a surface diversified by several ranges of hills, sandy and calcareous plains, artificial meadows, heaths, and rocks. The hills, which are pretty equal in height, consist of layers of the fossiliferous deposits, and are in many places covered with chestnut forests. The soil is dry, but produces abundance of corn and wine. There is but little natural grass-land, but the moorland pastures of the arrondissements of Barbezieux and Confolens serve for the outrun of a large number of cattle and sheep.

The chief river of the department is the Charente, which rising in Haute-Vienne and flowing N.W. crosses the north-east of the department of Charente, and enters that of Vienne as far as Civray; from this town it turns S., and again entering the department of Charente passes Verteuil, Mansle, and Angoulême, whence flowing westward past Châteauneuf, Jarnac, and Cognac, it enters the department of Charente-Inférieure; here it runs N.W. past Saintes, and Rochefort, of which it forms the harbour, and falls into the ocean opposite Isle-Madame. The Charente is subject to inundations which greatly contribute to the fertility of the land along its banks; its course is rapid, but the navigation upwards is facilitated by means of 27 large sluices designed to keep the water between each pair of sluices in a state approaching to equilibrium. Its whole length is 200 miles, of which 118 are navigable; the tide ascends it to a little above Saintes, and steamers ply up the river as far as Angoulême. The Tardoire rises in Haute-Vienne, flows W. past La-Rochefoucauld, below which it receives the Bandiat on its left bank. These two rivers flow in high channels through a calcareous soil, abounding in caverns and grottoes, which absorb some of their waters, for the volume of the united streams becomes very much diminished as it approaches the Charente, which it enters after receiving the Bogneure a little above Mansle. The lost waters are supposed to give rise to another feeder of the Charente, the Touvres, the source of which at Beaulieu resembles that of the Sorgue in Vaucluse, and rivals it in beauty. The Né rises in the south of the department, and enters the Charente below Cognac. The Seugne flows through the south-west of Charente-Inférieure, and joins the Charente E. of Saintes. The principal feeders on the right bank are the Antoine, which falls in below Cognac, and the Boutonne, which, rising in the department of Deux-Sèvres, flows through the Charente-Inférieure, passing St.-Jean-d'Angély and Tonnay-Boutonne, and enters the Charente about 15 miles from its mouth. The north-east of the department is crossed by the Vienne, which is joined to the Charente by the Canal-de-Poitou. The southern border of the department is formed by the Nizonne, and the Dronne, which receives the Nizonne and the Tude on its right bank, and falls into the isle, a feeder of the Dordogne. In the arrondissement of Confolens, there are a great number of ponds. All the waters of the department abound in fish.

The department contains 1,489,462 acres, which are distributed among 153,064 proprietors, and subdivided into 1,814,401 parcels. Of this area 917,108 acres are under tillage and meadows; 245,861 under vineyards; 195,385 are covered with woods and forests, and 89,967 with heaths, marshes, and waters. The annual quantity of bread-stuffs and potatoes produced amount to 515,000 quarters, of oats 48,000 quarters, and of chestnuts 35,000 quarters. Of wine 25,344,000 gallons are produced, none of which is in high repute; the wine-growers apply themselves more to the distillation of brandy than to the improvement of their wines, each possessing a still, and superintending the process of distillation on his own premises. The famous Cognac brandies, called *fines Champagnes de Cognac*, of which not more than 6000 butts are produced annually, but the quantity sold under the name exceeds 15000 butts, are distilled from the juice of a white grape called *folle blanche*; brandies made from red wines are considered greatly inferior. Truffles are very abundant; it is calculated that the quantity annually brought to market produces about 300,000 francs. Saffron is cultivated. A great number of pigs are fattened, and cattle for the Paris market; poultry is good and plentiful. The climate is agreeable and temperate, and the air is pure; strong winds from the west and south-west sometimes prevail.

Mines of iron, lead, and antimony are worked; a good deal of bar-iron and steel are manufactured; building stone, plaster of Paris, and grinding stone are found. Next to brandy, paper is the most important article of manufacture; broadcloth, linen, sailcloth, cordage, hats, corks, oak-staves, hoops, and pottery are also made. There are 1444 wind and water mills, including paper mills, 5 smelting furnaces, and 387 factories of various kinds. The commerce of the department consists of the agricultural and industrial products named before, and of oil, nuts, casks, rags, large chestnuts called *marrons*, &c.

The department is divided into 5 arrondissements which, with their subdivisions are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841
Angoulême .	9	144	132,323
Barbezieux .	6	88	56,077
Cognac . . .	4	70	52,301
Confolens . .	6	70	68,511
Ruffec . . .	4	82	58,681
Total. . .	29	454	367,893

In the arrondissement of Angoulême, the chief town is Angoulême. Mont-Bron, 16 miles E. of Angoulême, on the left bank of the Tardoire, has 3200 inhabitants, who manufacture iron and paper. La-Rochefoucauld, 12 miles N.E. of An-

goulême, on the right bank of the Tardoire, which is here crossed by a very ancient bridge, has 2300 inhabitants; close to the town is an old castle, flanked by 4 round towers, in which the author of 'Les Maximes' was born. St.-Amand-de-Boixe, near the left bank of the Charente; Blanzac, in a fine corn and grape district S. of Angoulême; Rouillac, N.E. of Angoulême; and Ruelle on the Touvre, which has a large foundry for iron cannon used by the French navy, a powder-mill and several blast-furnaces and iron-foundries, are the most important of the other towns, having each about 2000 inhabitants.

In the arrondissement of Barbezieux, the chief town is Barbezieux, 20 miles S.S.W. from Angoulême, on the road to Bordeaux; it has tribunals of first instance and of commerce, manufactures of linen and leather, and a population of 3335. Aubeterre, which stands on the slope of a hill near the Dronne, and has a church cut in the rock exactly under the court-yard of a castle that crowns the summit of the hill; Baignes, 8 miles from Barbezieux; Chalais, on the right bank of the Tude; Montmoreau, S. of Barbezieux; and Brossac, are small places that give name to the other cantons.

In the arrondissement of Cognac, the chief town is Cognac, which has tribunals of first instance, and of commerce, a college, several brandy distilleries, and a population of 4118. It stands in a beautiful and fertile district, on the right bank of the Charente, and is pretty well built. It is the entrepôt for the excellent brandies of the neighbouring districts, has some potteries and tan-yards, and also a considerable trade in wine, spirits, linseed, and juniper-berries. The remains of the elm under which the Duchess of Angoulême gave birth to Francis I., in 1494, are still seen in the park that surrounds the old castle above the town. Châteauneuf, on the left bank of the Charente, has 2336 inhabitants; near it is a grotto containing curious stalactites. Jarnac, memorable for the defeat and death of the Prince de Condé in 1569, stands E. of Cognac on the Charente, which is here crossed by a fine suspension-bridge; it has large brandy distilleries, and a population of 2510. Segonzac, 7 miles S. from Cognac, has 2620 inhabitants, who distil brandy of the best quality.

In the arrondissement of Confolens, the chief town is Confolens, which stands at the junction of a small stream, called Goire, with the Vienne; it has a tribunal of first instance, a college, a public library of 12,000 volumes, and 2765 inhabitants, who rear great numbers of cattle on the pastures in the neighbourhood, and carry on some trade in timber, oak-staves, and leather. Chabannais, on the Vienne; Champagne-Mouton, on the little river Argent; St.-Claud, S. of Confolens, near which there are several iron works; and Montembœuf, are chief towns of the other cantons, with populations generally under 2000.

In the arrondissement of Ruffec, the chief town is Ruffec, 27 miles N. from Angoulême, on the road to Poitiers, near the junction of the Lien with the Charente. It is well built, has a tribunal of first instance, a college, and 3000 inhabitants, who trade in corn, chestnuts, truffles, cheese, &c. Near it there is an extensive forest, and the remains of a fine old castle called the Château de Broglie. Aigre, S. of Ruffec, in a district fertile in grapes, corn, flax, and hemp; Mansle, on the Charente; Verteuil, 4 miles E. of Ruffec, on the left bank of the Charente; and Villefagnan, 6 miles W. of Ruffec, are the chief towns of the other cantons, each with less than 2000 inhabitants.

The department returns 5 members to the Chamber of Deputies, forms the see of the Bishop of Angoulême, is under the jurisdiction of the Cour Royale and University Academy of Bordeaux, and is included in the 11th Military Division, which has its head-quarters at Bordeaux.

(*Dictionnaire de la France;* Balbi, *Géographie; Statistique de la France.*)

CHARENTE, River. [CHARENTE.]

CHARENTE-INFE'RIEURE, a department in France, which consists of the basin of the lower Charente, and comprises the former provinces of Saintonge and Aunis. It is bounded N. by the department of Vendée, N.W. by that of Deux-Sèvres, E. by that of Charente, S. by that of Gironde, and W. by the Bay of Biscay. The department lies between 45° 5′ and 46° 19′ N. lat., 0° 7′ E. and 1° 13′ W. long. Its greatest length from N. to S. is about 85 miles, and its greatest breadth about 50; the area however amounts to only 2528 square miles. The population in 1841 was 460,245, being 182 to the square mile, or 14 above the average per square mile for all France. The Isle of Ré, which is separated from the main land of the department of Vendée by the channel called Pertuis-Breton; the Isle of Oleron, S. of Ré, and separated from it by the Pertuis-d'Antioche; the Isle of Aix, N. of the embouchure of the Charente; and Isle-Madame, which commands the entrance to the Charente from the south, are included in this department.

The coast-line of the department, including the north-eastern shore of the Gironde, measures 105 miles, and has several good harbours and well-sheltered roadsteads. The coast is low, consisting of salt marshes, partially separated from the sea by sand hills liable to be flooded by every tide, and extending a considerable way inland. Of these marshes, however, a very large extent has been converted into most productive land; the sea being shut out by means of dikes, and the surface of the marshes drained by canals, in pretty nearly the same way as the *polders* in Holland and Belgium are drained. [ANTWERP, Province.] In those to which the sea still has access, a great quantity of excellent salt is made. The rest of the department is level and very fertile. The soil, which consists of a vegetable and sandy soil, resting in most places on chalk, affords excellent pasture for great numbers of cattle, sheep, and horses; abundant supplies of the farm produce mentioned in the preceding article; and a vast quantity of wine, in the growth of which Charente-Inférieure ranks second among the wine-growing departments of France. The climate is temperate and healthy, except in the low grounds along the

coast, in which agues and fevers prevail in summer and autumn.

The department is drained by the Charente, the Boutonne, and the Seugne, described in the preceding article; by the Gironde, which borders it on the south-west [GIRONDE]; by the Sèvre-Niortaise in the north [DEUX-SÈVRES]; and by the Seudre, which, rising N. of Jonzac, flows N.W. past Saujon, and enters the bay opposite the Isle of Oleron. All these are tide rivers and navigable, and together with the canal from La-Rochelle to the Sèvre-Niortaise, and that from Brouage to Rochefort, afford great facilities for internal and external trade. The department is traversed by 9 royal and 16 departmental roads, besides the military road from Saumur to La-Rochelle.

The department contains 1,617,320 acres, distributed among 229,938 proprietors, and subdivided into 2,884,463 parcels. Of this area 812,025 acres are arable; 195,000 meadow and pasture; 276,000 under vines; and 195,217 under woods and forests, in which the chestnut, oak, and resinous trees are the most common. Grain of all kinds is produced in quantity more than sufficient for the consumption. The annual produce of wine, as estimated by the government, is 52,668,000 gallons, of which about one-third is used for home consumption; the remainder is distilled into brandy, or exported chiefly to Bretagne. None of the wines of the department are of high repute; the red wines of the right bank of the Charente, rank as third-class *vins d' ordinaire;* the white wine grown on the left bank, and in the eastern part of the arrondissement of La-Rochelle, are converted into brandy and sold as Cognac, but are greatly inferior to the *champagnes de Cognac* mentioned in last article. A large quantity of apples, plums, walnuts, peaches, &c. are grown. Other articles of produce are clover and flax seed, hemp, saffron, garden beans, which are an article of export, wormwood, &c. Great numbers of pigs are fattened; poultry is very abundant; hares, rabbits, and winged game are plentiful; aquatic birds in countless numbers frequent the marshes along the coast; the pilchard and oyster fisheries are extensive and valuable.

The industrial activity of the department is considerable. Besides the distillation of brandy, which is generally managed by the farmer on his own premises, and the manufacture of salt to the value of 2,295,402 francs a year, the following industrial products, though only of secondary importance, deserve mention—namely, woollens, hosiery, shoe and glove leather, fine pottery, vinegar, hoops, oak-staves, and timber. In almost all the ports, but especially at La-Rochelle and Rochefort, shipbuilding is carried on. The commerce of the department consists in the products already named, and in colonial produce, butter, oil, bottles, wine-casks, liqueurs, &c. Ships are fitted out for foreign trade, and for the cod fisheries; the coasting trade is active; about 600 fairs are held in the department yearly. Traces of iron and copper have been found, but no mines of any kind are worked.

The department is divided into 6 arrondissements, which, with their subdivisions and population, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
La-Rochelle . .	7 .	55	82,076
Jonzac	7	120	83,322
Marennes . . .	6	34	50,808
Rochefort . . .	4	47	57,233
Saintes	8	99	105,033
St.-Jean-d'Angély	7	126	81,773
Total . .	39	481	460,245

In the arrondissement of La-Rochelle, the chief town is La-Rochelle, the capital of the department and of the former province of Aunis. It stands on the north-side of a small inlet, which extends about 2 miles inland, and terminates in a salt-marsh, in 46° 9′ N. lat. 1° 10′ W. long., 295 miles S.W. from Paris, and has 10,559 inhabitants. By the marriage of Eleanor of Guienne and Poitou to Henry II., the town came into the hands of the English kings, from whom it was taken by Louis VIII. in 1224, again ceded to them by the treaty of Bretigny in 1360, but finally recovered by Bertrand du Guesclin in 1372. The Huguenots held it from 1557 to October 28, 1628, when the garrison, reduced by famine, surrendered to Louis XIII., who demolished the fortifications. The present defences were erected by Vauban. The entrance to the inlet which forms the outer harbour is defended by forts. The inner harbour round which the town is built, consists of two basins, both surrounded by fine quays, and one of them is closed by flood-gates, whereby ships are kept constantly afloat. The largest vessels can come up to Rochelle at high water. The town, which is entered by 7 gates, is well built, with broad straight streets, and houses adorned with porticoes, but of no great elevation. The finest square is the Place-du-Château, three sides of which are planted, and serve for promenades. Outside the walls there are two other extensive walking-grounds, called du-Mail and Champ-de-Mars. The chief buildings are the cathedral, the town-house, the exchange, the tower called Porte-de-l'Horloge, the marine baths, and the public library, which contains 18,000 volumes. The exports consist of the produce of the department, the imports chiefly of colonial produce. The town is the seat of a bishop, has tribunals of first instance and of commerce, a college, mint, school of navigation, besides numerous glass-works, sugar-refineries, potteries, ship-building yards, and cotton-yarn factories. Vessels are fitted out here for the Newfoundland fisheries. Marans, which is situated in a district recovered from the sea, near the confluence of the Vendée and Sèvre-Niortaise, has a tide harbour, which admits vessels of 100 tons up to the quays, while larger vessels load or unload in a safe road-stead near the mouth of the Sèvre. A canal is in course of formation which will admit vessels of 300 tons quite up to the town. The town is well built, has 4713 inhabitants, and a very important export trade in corn, exceeding in value 4,000,000 francs a year. It has also large timber yards and salt atores, and a good commerce in clover and oleagi-

nous seeds, brandy, flax, hemp, flour, hoops, and staves, &c. Courçon, and La-Jarrie are small towns, with rather more than 1000 inhabitants each.

To this arrondissement belongs also the Isle of Ré, which at its south-eastern extremity approaches within 2½ miles of the main land; on its northern extremity there is a lighthouse called Tour-des-Baleines, that marks the entrance to the Pertuis-Breton. The isle is 17 miles long; in some places 5 miles, in others only 1 mile wide. It has neither grass, nor spring, nor tree; but vines flourish on it, and a good deal of brandy is made; salt also is manufactured, and exported from the numerous harbours of the isle. Filtered sea water is used for drink. The isle is defended by 4 forts, and has about 16,000 inhabitants, who are chiefly engaged in fishing and in making salt. The chief towns are—Ars-en-Ré, on the west coast, which has a small harbour and 3668 inhabitants; St.-Martin-en-Ré, on the east coast, which is fortified, has a tribunal of commerce, and a population of 2617; and La-Flotte, which has a harbour for vessels of 300 tons' burden, and 2429 inhabitants.

In the arrondissement of Jonzac, the principal town is Jonzac, which stands on the Seugne, is defended by a strong castle, and has a tribunal of first instance, and 2569 inhabitants. The other towns are Mirambeau, which has a fine castle, a church built by the English, and 2384 inhabitants: Archiac, St.-Genis, Montendre, Montguyon, and Montlieu, the population of each of which does not exceed 1500.

In the arrondissement of Marennes, the chief town is Marennes, situated on the northern side of the embouchure of the Seudre, on which there is a harbour about half a mile from the town. It is a well-built place, has tribunals of first instance and of commerce, and 4469 inhabitants, who carry on a brisk trade in the produce of the country, and in salt made in the marshes near the town, which are a source of great profit, but very insalubrious. Royan, a watering-place on the north shore of the Gironde, has a lighthouse, and 2957 inhabitants; there is regular steam communication between this place and Bordeaux. La-Tremblade, on the south side of the embouchure of the Seudre, has a small harbour, and a population of 2551. Brouage, a fortress and seaport, a few miles N. of Marennes, and on the navigable canal of Brouage before mentioned, is now almost deserted on account of the unhealthiness of the site.

The Isle of Oleron, which lies off the coast, between the mouths of the Charente and the Seudre, is included in the arrondissement of Marennes. Its southern point is separated from the main land by the Passe-de-Maumusson, a strait about 2½ miles wide, commanded by a fort. The length of the island is about 19 miles, its greatest breadth 5. The isle is traversed in its whole length by a road which terminates at the north-west extremity, near the Chassiron lighthouse, at the entrance of the Pertuis-d'Antioche. It is very fertile, yielding all the products mentioned in this article, and has a population of 16,000. The western coast is bold, and without harbours. On the south-east of the isle, opposite Brouage, is the town of Oleron or Château-d'Oleron, which has a harbour, distilleries, rope-walks, ship-building yards, and 3135 inhabitants. St.-Pierre, which stands near the centre of the island, has a tribunal of commerce, and a population of 4769.

In the arrondissement of Rochefort, the chief town is Rochefort-sur-Mer, situated partly on a hill, and partly on a marsh, on the right bank of the Charente, and 9 miles from its mouth, and has 20,077 inhabitants. The approach to the town is defended by forts all along the banks of the river. The streets of the town are broad, regularly built, and several of them planted with double rows of acacias and poplars; the houses are low. The finest buildings are—the marine hospital, which stands on a height outside the town; the residence of the port admiral; the bagnio; the civil and military hospital; and more especially the arsenal, and naval artillery school, in connection with which are dock-yards, rope-walks, and other establishments for manufacturing every thing necessary to the completion of the largest men-of-war. Other remarkable objects are the large saw-mills, the water-works for cleansing the harbour, the theatre, &c. The naval harbour, which ranks as the third harbour of its kind in France, has a depth of 22 feet at low water, and 40 feet at full tide. In the part of the harbour allotted to merchantmen, ships of 900 tons can enter at all times. The town is the seat of a maritime prefect, has tribunals of first instance and of commerce, a college, schools of hydrography and of naval medicine, several sugar refineries and vinegar works, and a large trade in colonial produce and the staple products of the department. It is surrounded by ramparts which are planted with trees. The importance of Rochefort dates from 1666, when it was made a naval station by Louis XIV. Tonnay-Charente, 10 miles E. of Rochefort, on the right bank of the Charente, has a safe harbour, into which vessels of 600 tons can enter, and a population of 3435, who carry on a brisk trade in the products of the country, colonial produce, coal, deals, oak-staves, oil, bricks, &c. The other towns are Surgères, which has a population of 2153, and Aigrefeuille, population 1688.

The Isle of Aix, which belongs to the arrondissement of Rochefort, is about half a mile long and a quarter wide. It is fertile, has a population of about 500, and is very important on account of its position and fortifications, which command the approach to Rochefort from the Pertuis-d'Antioche. Here Napoleon went on board an English line-of-battle ship, July 15, 1815. Isle-Madame, close to the mouth of the Charente, is also strongly fortified.

In the arrondissement of Saintes, the chief town is Saintes, the capital of the former province of Saintonge, which stands on a hill above the left bank of the Charente, 43 miles S.E. of Rochelle, and has 10,000 inhabitants. The appearance of the town from whatever side it is approached is very picturesque; but the interior consists of crooked streets, and generally ill-built houses. The former cathedral, the churches of St.-Eutrope, and Sainte-Marie-des-Dames, are the most remarkable buildings. The town is the seat of the court of assize for the department, of

tribunals of first instance and of commerce, and possesses a college, public library, theatre, cabinets of natural history, antiquities, and natural philosophy. The departmental nursery is close to the town. Woollens, hosiery, sieves, pottery, shoe and glove leather, and wine-casks are the chief industrial products; there is also a good trade in corn, brandy, timber, wool, &c. Saintes is the Roman *Mediolanum;* in the time of Ausonius it was called *Santones* from the people whose capital it was, and hence the modern name. Of ancient remains the most interesting are the Roman baths, amphitheatre, and a triumphal arch which bears inscriptions dedicatory to Germanicus, Tiberius, and Drusus. Pons, 14 miles from Saintes, beautifully situated on the left bank of the Seugne, has an ecclesiastical school, and 4543 inhabitants; in the centre of the town are the ruins of the ancient castle of the lords of Pons, a square tower of which, 108 feet high, is used as a prison. Saujon, 16 miles W. of Saintes, stands on the Seudre, which here begins to be navigable, and has 2217 inhabitants. Gémozac, W. of Pons, has a population of 2610. Burie, St.-Porchaire, and Cozes, have each a population under 2000. Near the last, which is on the road from Saintes to Rochefort, is the largest oak in France, calculated to be the growth of at least 2000 years.

In the arrondissement of St.-Jean-d'Angély the chief town is St.-Jean-d'Angély, 20 miles E. of Rochefort, on the right bank of the Boutonne, which here begins to be navigable for small craft. It is irregularly built; but the usage common to all this part of Aunis, of whitewashing the houses every year, gives it a clean, gay look. The town has tribunals of first instance and of commerce, a college, and a population of 6107. The corn-market-house, the former abbey of St.-Jean, public baths, and gunpowder mills are the most remarkable objects in the town. Brandy, wine, seeds, timber, &c. are the chief articles of commerce. St.-Savinien, on the right bank of the Charente, has 3[illegible] inhabitants. Aulnay, St.-Hilaire, Tonnay-Boutonne, and Matha have each less than 2000 inhabitants.

The department forms the see of the bishop of La-Rochelle, resorts to the Cour Royale and University Academy of Poitiers, returns 7 members to the Chamber of Deputies, and is included in the 11th Military Division, of which Bordeaux is head-quarters.

(*Dictionnaire de la France; Statistique de la France;* Murray's *Handbook of France.*)

CHARENTON-LE-PONT. [SEINE.]

CHARES. [RHODES.]

CHARES of Mitylène, Master of the Ceremonies to Alexander the Great, made a collection of anecdotes, or perhaps rather wrote an account of the private life and adventures of the king. We may judge, from the fragments in Athenæus, that this work contained numerous details which were exceedingly curious. (Athenæus, *Deipn.* Casaub. iii. 93, 124; x. 434, &c.)

CHARGE, in the practice of artillery, denotes the quantity of powder placed in a gun, howitzer, or mortar, for the purpose of expelling the shot or shell by its explosion.

The service charge, for guns, varies from one-sixth to one-third of the weight of the projectile: the lower charges being used in the field or in naval actions, and the higher in breaching the walls of fortresses. It is evident that extensive ranges and great velocities of shot are not required when artillery is directed against an enemy's columns or lines; and it is found by experiment that a ball which just pierces the timbers of a ship will fracture them more than if it passed rapidly through them. On the other hand, the greatest momentum is necessary on commencing the formation of a breach in a rampart faced with brick or stone-work, in order that the penetration of the shot may be as great as possible; and therefore the highest charges are then required.

The service charges for carronades vary from $\frac{1}{12}$ to $\frac{1}{8}$ of the weight of the shot.

According to Dr. Hutton (Tract 34), different charges of powder, when the weight of the ball remains the same, produce velocities which are as the square roots of the weight of powder; and, when the weight of powder is the same while that of the ball varies, the velocities are inversely proportional to the square roots of the weight of the balls. The charge producing the maximum velocity is greater as the gun is longer; but it does not increase in so high a ratio as the length of the gun.

CHARGE' D'AFFAIRES. [AMBASSADOR.]

CHARIOT, a light sort of coach; also, a car in which men of arms were placed in fight. The name is derived from the French word *charrette.* Cars or chariots are of very early use.

Chariots armed with scythes were in use for many ages in all the eastern countries. Such are mentioned in the Second Book of Maccabees (ch. xiii. v. 2), which the King of Syria led against Judæa. They were used by the Persians (Xenophon, 'Anab.,' i. 8), and by the ancient Britons (Cæsar 'De Bell. Gall.,' v. 19).

CHARI'SIUS, AURE'LIUS ARCA'DIUS, a Roman jurist, who is supposed to have lived about the time of Constantine the Great. It is certain that he lived at least after Modestinus, whom he quotes. Modestinus lived under the Emperor Alexander Severus (A.D. 222—235.) Charisius was Magister Libellorum Supplicum, a keeper of petitions, as we learn from the title of an excerpt from his own writings. ('Dig.' 1, tit. 11.) He wrote a work, in one book, 'De Testibus;' a work, in one book, 'De Officio Praefecto Praetorio;' and a work, in one book, 'De Muneribus Civilibus' (Index Florentinus). There are a few excerpts from the three works of Charisius in the 'Digest.'

CHARITABLE USES. [USES, CHARITABLE AND SUPERSTITIOUS.]

CHARITE', LA. [NIE'VRE.]

CHARITIES. [USES, CHARITABLE.]

CHA'RITON, the author of a Greek romance in eight books, entitled 'The Loves of Chaereas and Callirrhoë.' The time at which he lived is uncertain, but probably not earlier than the fourth century of our æra. Though this, like most other Greek romances, displays little invention, it has some merit in point of style. Chariton was pub-

lished by D'Orville, Amsterdam, 1750, 3 vols. 4to., with a valuable commentary. It was translated into German by Schmieder, Leipzig, 1806, 8vo.; and into French by Larcher.

CHARKOW, or KARKOFF. [SLOBODE UKRAINE.]

CHARLEMAGNE. [CHARLES I. of France.]

CHARLEMONT. [ARDENNES.]

CHARLEROI. [HAINAULT.]

CHARLES-MARTE'L, a natural son of Pepin d'Heristal, duke of Austrasia, succeeded his father in 715. Under the title of mayor of the palace he governed the kingdom of France, under the nominal kings Chilperic II. and Thierry IV. Charles compelled Eudes, duke of Aquitania, to do homage to the Frankish crown. He also defeated the Saracens of Spain in a great battle between Tours and Poitiers, 732, and effectually checked the advance of the Mussulmans into the heart of Europe. After Thierry's death, 736, Charles-Martel continued to hold the supreme authority, under the title of Duke of the Franks, for the rest of his life, no king being appointed to succeed Thierry. Charles-Martel died in 741, at Crécy, on the river Oise, and his two sons, Karlomann and Pepin, divided the dominions of the Franks between them.

CHARLES I., called *Charlemagne* by the French, and by the Germans *Karl der Gross*, or *Charles the Great*, son of Pepin le Bref, king of the Franks, and of Bertha, daughter of Caribert, Count of Laon, and grandson of Charles-Martel, was born about 742, in the castle of Salzburg in Bavaria. Pepin died in 768, and Charles and Karlomann, his sons, succeeded to the vast dominions of the Franks; but in 771, on the death of Karlomann, Charles took possession of the whole, although Karlomann had left two sons. In 772 Charles began his wars against the Saxons, who were at length subdued in 803, but not without the exercise of great severity, and even cruelty. In 774 Charles supported Pope Adrian I. against Desiderius, king of the Longobards, defeated him at Pavia, and took him prisoner. He assumed the crown of Lombardy, and confirmed Pepin's donation of the Exarchate of Ravenna and the Pentápolis to the Pope, who on his part acknowledged Charles as Patrician of Rome and Suzerain of Italy, with the right of confirming the election of the popes. In 778 he went to Spain against the Saracens, and conquered part of Catalonia, Aragon, and Navarre; but, on recrossing the Pyrenees, his rear guard was defeated at Roncesvalles by the Vascones and the Saracens united. Several nobles of Charles's court fell on that day, among whom was Roland, warden of the borders of Brittany, 'Præfectus Brittannici Limenis,' who has become the hero of many a romantic tale. In the year 800 Charles, being victorious every where, and master of the best part of Europe, visited Rome, where he was solemnly crowned Emperor of the West by Pope Leo. III., with the title of Carolus I. Cæsar Augustus; and Nicephorus I., Emperor of Constantinople, sent an embassy to Charles, by which he acknowledged him Emperor of the West, with the title of Augustus. The caliphs of Bagdad sent embassies to him. About 807 or 808, the first mention occurs in history of the Normans and Danes making descents on the coast of France, and Charlemagne took great pains to fortify the extensive coast-line of his dominions. In January 814, Charlemagne died of pleurisy, at Aix-la-Chapelle, after a reign of forty-seven years, and was buried at Aix-la-Chapelle.

Charlemagne has been considered by some as having, by his alliance with the popes, favoured the encroachments of their spiritual power over temporal affairs. He enacted a series of regulations upon civil and religious matters which may be considered as forming a code of laws. [CAPITULARIUM.]

CHARLES II., *le Chauve* (the Bald), the son of Louis le Débonnaire by his second wife, and grandson of Charlemagne, was born at Frankfort-on-the-Main, A.D. 823. Before the birth of Charles, Louis had partitioned his dominions among his three sons, Lothaire, Pepin, and Louis, and after his birth he partitioned it anew, which occasioned great dissatisfaction.

After the death of his father Louis le Débonnaire in 840, Charles, to the end of his reign, was engaged in frequent hostilities with his relatives, varied by occasional treaties. In 842 occurred the final partition of the empire of Charlemagne, by which Charles obtained France; Italy formed the portion of Lothaire; and Germany became the portion of Louis, hence denominated Le Germanique.

From 841 to the end of this reign, France was exposed to the attacks of the Northmen, who at different times took Rouen, Paris, Bordeaux, and other places. Charles made but a very ineffectual resistance to them, and in 866 made a disgraceful treaty with a band who had ascended the Seine, agreeing to pay them four thousand pounds' weight of silver, on condition that they should cease their depredations; to deliver up or make compensation for all the French whom they had reduced to slavery and who had escaped; and to pay a certain sum for every Northman who had been killed by his subjects.

In 875 the Emperor Louis II., son of Lothaire, died without issue, and in him the elder branch of the descendants of Louis le Débonnaire became extinct. Charles, by the favour of the Pope, received the imperial crown at Rome on Christmas Day, 875. Charles's dominions then attained their greatest extent: he possessed all the countries now comprehended in France (except Alsace, Lorraine, and a part of Burgundy) and Italy. The death of his brother, Louis le Germanique, in 876, offered new allurement to the ambition of Charles, who prepared to attack Louis of Saxony, one of the sons of the deceased prince. The troops of Charles were defeated, and in 876 Charles was driven out of Italy by Karlomann, another of the sons of Louis, and ended his days at a place called Brios, in the neighbourhood of Mount Cenis in the Alps. He died at the age of fifty-four, having reigned thirty-seven years from the time of his father's death.

CHARLES, known as *Charles le Gros*, or the Fat, the son of Louis le Germanique, a nephew of Charles le Chauve, was born about

832. On the death of his father in 876, he inherited the kingdom of Suabia; by the death of his brother Karlomann (in 880) he acquired the kingdom of Italy, and became emperor of the West, about the end of the same year; in 882 he obtained the kingdom of Saxony by the death of his other brother, Louis of Saxony; and the crown of France by the death of Karlomann (in 884). Charles, however, showed an utter incapacity of governing the extensive dominions thus acquired. The Northmen ravaged his coasts, besieged Paris in 885, and were only at length bought off; and in 887, he was compelled to resign the imperial crown to his nephew Arnolph, an illegitimate son of Karlomann, king of Bavaria and Italy. He survived his deposition only a few weeks, dying early in the year 888 at a castle named Indinga, in Suabia. Charles is not usually numbered in the regular succession of the kings of France.

CHARLES III., *le Simple*, was the son of *Louis le Bègue*, or the Stutterer; but his legitimacy was disputed. He was however set up in opposition to Eudes, count of Paris, who had been elected king of France upon the death of Charles le Gros, and crowned king of France at Reims. On the death of Eudes in 898, he was elected king without any competitor, but over a circumscribed territory, and with very limited power.

The reign of Charles was marked by the cession to the Northmen, under their chief Rollon or Rollo, of that part of France called from them Normandie. By the treaty in which this cession was made, Charles agreed to give his own daughter in marriage to Rollo, while Rollo and his followers consented to become Christians.

Upon the decease of Louis, king of Germany, the nobles of Lorraine bestowed the sovereignty of that country upon Charles. This involved him in a war, in the course of which he was entrapped by Herbert, count of Vermandois, who made himself master of his person, and placed him in confinement in 923. Charles died in captivity in 929, after a reign distinguished alike by incapacity and misfortune.

CHARLES IV., *le Bel* (the Handsome), third son of Philippe IV., was born in 1295, and succeeded his brother, Philippe V., in 1322. The reign of Charles was short (1322—1328), and not marked by any great events. He died in 1328; and in him ended the direct succession of the line of Capet, the crown passing into the collateral branch of Valois.

CHARLES V., *le Sage* (the Wise), was the son of King Jean II., who was taken prisoner by Edward the Black Prince at Poitiers in 1356. During the captivity of his father (1356—1360), he seems to have held the reins of government as his lieutenant. His regency was chiefly occupied by disputes with the States-General, and the popular party (who at this time were making struggles for constitutional freedom), headed by Etienne Marcel, mayor of Paris. After several vicissitudes Marcel was murdered by the Parisians, who soon afterwards submitted to the regent Charles; but the discontent was not permanently quelled, and broke out again on several subsequent occasions.

A dispute with the King of Navarre, whose wealth enabled him to assemble a powerful force of mercenaries, was the next trouble of Charles. The ravages committed by these troops, and by 'the free companies,' the name assumed by the soldiery who were disbanded during the existing truce between France and England, occasioned a dreadful insurrection of the peasantry, who assumed the title of the *Jacquerie*, and whose atrocities added to the horrors of the time. These wretched beings, oppressed by the exactions and insulted by the levity of their lords, rose, and, arming themselves, committed the most dreadful ages. The Jacquerie were supported by the bourgeois of Paris and other places, but the insurrection was at length completely put down.

The release of John was obtained by the treaty of Bretigny (1360), and he returned to France, and resumed the government; but on his death, in 1364, Charles became king in his own right, and, though his conduct has been deemed by some to afford no proof of wisdom or energy, yet his measures seem to have been well chosen and well timed: he gained no distinction as a soldier, but in his reign France recovered in a great degree from the disasters which preceded his accession. In the early part of his reign he gained some advantages, chiefly through the valour and conduct of Bertrand du Guesclin, over the King of Navarre; and, having effected an accommodation with that prince, he turned his attention to the recovery of Aquitaine from Edward the Black Prince, to whom it had been assigned by the treaty of Bretigny. War was accordingly declared against England in 1369. Charles forbade his troops to engage in pitched battles, in which experience had shown their inferiority; and the system was effective. Though the Black Prince took Limoges, and the Duke of Lancaster marched an army through France from Calais to Bordeaux, Charles maintained his predominance in Aquitaine, and completely subdued Bretagne. The Duke of Bretagne took refuge in England. In 1573 a truce for a year was concluded, and negotiations were entered into. During the continuance of this truce occurred the death of the Black Prince in 1376, and of his father, Edward III., in 1377.

Within a week after the English king had breathed his last, war was again renewed with England. A French and Castilian fleet committed some mischief on the coast of England, and Charles had some success in Guienne and in Normandy; but the Castilians, who had engaged to attack Navarre, retreated upon the arrival of an English force at Bordeaux, and by the assistance of England the Duke of Bretagne recovered possession of his duchy in 1380.

Charles died July 13, 1380, at the age of forty-three, after a reign of more than sixteen years. He was an encourager of literature; and the Royal Library at Paris owes its origin to him. His talents for government seem to have been under-estimated by some, because he made no figure as a soldier; but the defensive system of warfare which he enjoined his generals to practise was more successful than the impetuous courage of his father. Notwithstanding the wars he carried on, he left his exchequer well filled.

CHARLES VI., *le Bien-Aimé* (the Well-beloved), succeeded his father in 1380, while yet in his minority. During his minority the country was harassed by the contests of his uncles for his guardianship, as also by risings of the oppressed people—the peasantry as well as the townsmen, among the last those of Rouen and Paris were conspicuous. In 1385 Charles married Isabelle, the daughter of the duke of Bavaria-Ingolstadt, and in 1386 he made preparations for an invasion of England.

His forces amounted, according to Froissart, to 20,000 men-at-arms, 20,000 cross-bowmen, partly Genoese, and 20,000 'stout varlets.' A fleet almost innumerable, 1287 vessels according to some, was collected on the coast of Flanders; and an enormous wooden bulwark was constructed, capable of sheltering, it was said, the whole army from the dreaded archery of England; it could be taken to pieces and replaced at pleasure. But various delays, whether from contrary winds or other causes, prevented the sailing of the fleet, or a tempest so far shattered it as to frustrate its object; and the king, who was to embark in person, returned to Paris, after exhausting his resources in the equipment of such a force, and desolating by the consequences of its march the face of the country which he traversed. A continuation of war and discord, productive of no great result, but devastating the country and distressing the inhabitants, was carried on against Bretagne, Tunis, Rome, and England, until 1392, when Charles became insane. A fresh struggle ensued among his relatives for his guardianship, and the Duke of Burgundy, his uncle, was at first the most successful. The death of the Duke of Burgundy, in 1404, threw the reins of government for a time into the hands of the Duke of Orleans, the king's brother. The young Duke of Burgundy, however, having acquired, in 1405, possession of the persons of the king and the dauphin Louis, began to gain the ascendancy over the Duke of Orleans; a reconciliation, cordial in appearance, was effected, but their hatred continued to rankle till the murder of the Duke of Orleans by direction of the Duke of Burgundy, in 1407.

We pass over the subsequent struggles between the factions of the Bourguignons and the Armagnacs, as the rival parties were designated, in order to come to the invasion of France by Henry V. of England, who had lately succeeded his father Henry IV. on the throne. Henry V. had negotiated for the hand of Catherine, daughter of Charles, and demanded as her portion such terms as the French refused to accede to. The domestic troubles of France were increased by the dauphin, who at this conjuncture seized the reins of government. The Armagnacs rallied round him, and to their party belonged the long list of nobles and gentlemen who fell in the disastrous battle of Agincourt. The dauphin died shortly after this, his next brother Jean died in 1516, and was succeeded as dauphin by Charles, afterwards Charles VII. The Armagnac faction now predominated, and the predominance was exercised with remorseless oppressiveness by the Count of Armagnac, constabl[illegible] simulated the Parisian[illegible] Burgundy. Armagnac and his partisans were murdered by the Parisians in 1418; the king fell into the hands of the Burgundians; the dauphin escaped with difficulty, and established his court at Poitiers; while Normandy was overrun, and its capital, Rouen, taken by Henry V. in 1419. The subsequent assassination of the Duke of Burgundy at Montereau threw his party into the arms of the English, and led to the treaty of Troyes, by which the administration of France was placed in the hands of Henry V. The English retained their superiority in France till the death of Henry in 1422. Charles survived him only a few weeks. He died on Oct. 28, 1442.

CHARLES VII., *le Victorieux* (the Victorious), succeeded, upon his father's death, and celebrated his coronation at Poitiers in 1423. The greater part of his reign was occupied with his wars against the English, which are detailed under ARC, JOAN OF; and BEDFORD, DUKE OF.

While engaged in struggling with the English, Charles distinguished himself by two measures, which may be considered as the most beneficial of his reign. The first of these was the *Pragmatic Sanction*, which is considered as having laid the foundation of the liberties of the Gallican church; and the second was the reform of the army. By this last measure the provinces were delivered from military license, and the army, though reduced perhaps in number, was increased in efficiency.

Though the success of Charles's arms seems to give justice to his title of 'the Victorious,' and under his government the kingdom was raised from the lowest point of depression to a respectable and flourishing state, yet, in his court and in his family, this monarch was far from happy. In his early youth he was the object of his insane father's caprice; his eldest son (afterwards LOUIS XI.) allied himself with his enemies, and at one time withdrew to the court of the Duke of Burgundy, by whom he was sheltered, and who was consequently involved in disputes with Charles. His favourites also, of whom he had a succession, too often led him astray. His last favourite, Antony of Chabannes, lord of Dammartin, caused, in 1453, the ruin, by false accusation, of Jacques [illegible] merchant and banker of Bourges, whose extensive business and great wealth had enabled him to afford Charles most important aid in his affairs, and it was from fear of Dammartin that the Dauphin Louis fled to Burgundy. A[illegible] under a monomania that his children had conspired to poison him, Charles refused food, and died of exhaustion at Mehun-sur-Yèvre, near Bourges, July 22, 1461.

In the reign of this prince the Greek language was first taught in the university of Paris, which is said to have contained at that time a very large number of students.

CHARLES VIII., son of Louis XI., succeeded his father in 1483, being little more than 13 years old. The minority of Charles was troubled by rebellions and disturbances raised by the ambitious nobles, impatient of the predominance of the lady

of Beaujeau, his sister, who had made herself his guardian. When Charles attained his twenty-first year, he freed himself from the guardianship of his sister, broke off his engagement with a daughter of Maximilian, to whom he had been betrothed, and married Anne, the daughter and heiress of the Duke of Bretagne, and who had been married by proxy to the Emperor Maximilian. These events led to a war with Maximilian, who was supported by Henry VII. of England, and by Ferdinand and Isabella of Spain; but the French averted the hostilities of all of them by concessions and treaties.

Charles VIII. had inherited the claims of the house of Anjou to the kingdom of Naples, and determined to support his claim by force of arms. In 1494 he set out for Italy at the head of a numerous army, and experienced little resistance. He entered Florence and Rome, where he made a treaty with the Pope, and early in 1495 set out for Naples, which submitted without a struggle. But, while he stayed at Naples, a league was formed between the Pope, the Emperor, Ferdinand of Spain, the republic of Venice, and the treacherous Sforza, to intercept him on his return. After defeating the confederates at Foranovo, near Piacenza, where they awaited him with vastly superior forces, Charles effected his retreat; but Naples was reconquered as rapidly as it had been gained, and the King of Naples was enabled to re-enter his capital three months after he was driven from it. Charles meditated a second expedition into Italy, and the Duke of Orléans was appointed to the command; but the duke was not anxious to be distant from the court; and the affair was not pressed with any activity. The short remainder of Charles's reign was occupied in attention to the internal government of the country, in which some useful reforms were commenced. He died without surviving issue April 7, 1498, from the effects of a blow on the head, received while passing through a door-way which was not high enough.

CHARLES IX., the second son of Henri II., succeeded his elder brother, Francis II., in 1560, being then in his eleventh year. The whole of his reign, during which the influence of his mother, Catherine de' Medici, was predominant, was occupied by the bloody wars, the faithless peaces, the assassinations and murders, that distinguish the contests against the Huguenots above even most other civil wars; and the latter part of his reign was signalised by the enormity of the massacre of St. Bartholomew (1572).

In 1570 Charles married Elizabeth, daughter of the Emperor Maximilian II., but died without issue May 31, 1574, having lived nearly twenty-four years and reigned thirteen years and a half.

(Sismondi, *Histoire des Français; History of France* in the *Library of Useful Knowledge; L'Art de vérifier les Dates; Biographie Universelle*, &c., &c.)

CHARLES X., King of France (CHARLES PHILIPPE, Comte d'Artois), born Oct. 1757, was the youngest son of the dauphin, and brother of Louis XVIII.

Charles married, in the year 1773, Maria Theresa of Savoy. When the disturbances which preceded the Revolution began, the Comte d'Artois opposed concession, and he remained consistent in his opposition throughout the whole period of the Revolution. Charles was one of the first to emigrate: he left France in July 1789, and took an active but not a very distinguished part in the attempts of his family in the support of their claims. For some time previous to the first abdication of Bonaparte in 1814, the Comte d'Artois had been residing in Scotland and in England, and on the occurrence of that event he entered France with the title of Lieutenant-General of the Kingdom. In March 1815, he left France, in consequence of Bonaparte's return from Elba, but he went back after the battle of Waterloo. In Feb. 1820 he lost his second son, the Duke of Berry, by the hand of a fanatical assassin. His elder son, the Duke of Angoulême, who had married his cousin, the daughter of Louis XVI., was childless. The Duke of Berry left one daughter, and a posthumous son, who is the present Duke of Bordeaux.

Louis XVIII. died Sept. 16, 1824, and Charles X. was proclaimed king. The measures of himself and his ministry gave very general dissatisfaction. The law passed in 1825, awarding the penalty of death for the profanation of the consecrated host, and other severe penalties for the profanation of sacred utensils, of churches, &c., and the law for an indemnity to the emigrants whose property had been confiscated, had a bad effect on public opinion; but his proposals, in 1827, for a law restricting still more closely the liberty of the press, and for a new municipal law in 1829, were rejected by the Chambers. Upon this the king prorogued the Chambers, and formed a new ministry, consisting of Prince Polignac, MM. Montbel, Haussez, La Bourdonnaye, Guernon Rainville, and others. This measure produced a violent sensation throughout the kingdom, and when the Chambers again met, on March 2, 1830, they voted by a considerable majority that this ministry did not possess their confidence. The king was, however, immoveable, and on March 19 the Chamber was prorogued, then dissolved, and new elections were made. The new elections increased the strength of the opposition. Meantime news arrived of the conquest of Algiers; but the tidings were received surlily by the opposition. At length, at a council of ministers, it was resolved to give an extended interpretation to article 14 of the Charter, which gave the king the power 'of providing by ordinances for the safety of the state, and for the repression of any attempt against the dignity of the crown;' and accordingly, on July 25, a series of ordinances, suspending the liberty of the periodical press, dissolving the newly elected Chamber of Deputies, and altering the system of election, were issued. The sequel is well known. On July 27, 1830, the first encounter took place between the troops and the people. Next day an ordinance declared Paris to be in a state of siege, and the fighting in the streets became general. On the 29th, the people attacked the Louvre and the Tuileries, and Marmont with the guards evacuated Paris. On Aug. 2, Charles X. abdicated the crown in favour of the Duke of

Bordeaux, and set out for Cherbourg; but the Chambers elected the Duke of Orléans. From Cherbourg Charles X. sailed for England, and took up his residence in Holyrood House. He afterwards removed to Prague in Bohemia; and in the autumn of 1836 to Goritz in Styria, for the sake of a milder climate. Soon after his arrival he fell ill of the cholera, and died Oct. 6, 1836. His son, the Duke of Angoulême did not assume the royal title, and also died at Goritz, in June 1843. The Duke of Bordeaux is now the only remaining male representative of the elder branch of the Bourbons.

(Capefigue, *Histoire de la Restauration; Annuaire Historique* for 1824–30; Montbel, *Dernière Epoque de l'Histoire de Charles X.*)

CHARLES OF BLOIS. [PHILIPPE VI.]

CHARLES LE TE'ME'RAIRE (the Rash), the last Duke of Burgundy, was the son of Philip the Good, and was born Nov. 10, 1433. As Count de Charolais, he was distinguished by his quarrels with his father, and by his courage in the league of the great nobles of France against Louis XI., who had attempted to exercise his feudal superiority over them. He had also shown great harshness and severity in suppressing an insurrection in the Low Countries during his father's life. In 1467 Charles succeeded his father as Duke and Count of Burgundy, Brabant, Limbourg, and Luxembourg; Count of Hainault, Holland, Zeeland, and Namur; Marquis of Antwerp; and Lord of Friesland and Malines. In the year after his succession occurred the visit of Louis XI. to Peronne, which has been rendered familiar to the English reader by Sir Walter Scott's novel of 'Quentin Durward.' Louis came to induce the duke to withdraw from the alliance with his brother-in-law, Edward IV. of England, against France, while he was at the same time exciting the people of Liège to rise against the duke's authority, which at last they did, unexpectedly, while the king was in the duke's power. Charles placed Louis under arrest, compelled him to accompany him in an expedition to punish Liège, which, after an obstinate defence, was effected; and then Louis was allowed to return to Paris.

In 1470 war was again commenced with France. Charles passed the Somme at the head of a large army, and took and burnt the town of Nesle. He then sought to obtain the erection of his territories into a kingdom, from the Emperor Frederic III., by the offer of the hand of his daughter Mary to the archduke; but mutual suspicion of each other, and probably some management of Louis XI. caused the negotiation to fail.

In 1475 he possessed himself of the duchy of Lorraine; and in 1476 he attacked the Swiss, who, though far inferior in numerical force, defeated him in a battle at Granson, in the Pays de Vaud, near the south-west extremity of the Lake of Neufchâtel. Enraged at this disgrace, he assembled a force of 60,000 men, overran the Pays de Vaud, and was again defeated by the Swiss, in a sanguinary battle at Morat, in the canton of Fribourg. Stung to madness by defeat, by the desertion of his allies, and the treachery of his mercenaries, he again entered Lorraine, and laid siege to Nancy. The Duke of Lorraine, aided by the Swiss, attacked him here, defeated his small and dispirited army, and Charles himself perished in the route. This was in the winter of 1476 77.

The death of Charles le Téméraire extinguished the male line of the dukes of Burgundy, and with it the grandeur and importance of the duchy. Charles had left an only daughter, Mary, who succeeded to all the dominions of her father out of France. She married the Archduke Maximilian, to whom her father had proposed her, and through whom her Flemish possessions descended to the Spanish branch of the house of Austria.

CHARLES OF NAPLES. [ANJOU, COUNTS AND DUKES OF.]

CHARLES I. II. III. IV., of Germany. [GERMANY.]

CHARLES V., Emperor of Germany (Don Carlos I. of Spain) was born at Ghent, in 1500. His father, the Archduke Philip of Austria, was son of the Emperor Maximilian I., and of Mary, daughter of Charles the Rash and heiress of the house of Burgundy; his mother was Joanna, only child of Ferdinand of Aragon and Isabella of Castile. By the death of Philip in 1506 Charles inherited the Netherlands and Franche Comté. By the death of Ferdinand of Aragon, Jan. 1516, Charles, then sixteen years of age (his mother Joanna being insane), inherited the crowns of Aragon and Castile, with their vast possessions in the New World, as well as the kingdoms of Naples and Sicily, and the island of Sardinia. After the death of his grandfather, Maximilian, in 1519, he was elected Emperor of Germany.

Upon the death of Ferdinand, Cardinal Ximenes, his celebrated minister, sent pressing invitations to Charles to repair to his Spanish kingdoms; but Charles delayed his departure from Flanders for more than a year, and, when at the end of 1518, he arrived in Spain, he produced much dissatisfaction from having brought with him his Flemish court, among whom he distributed many of the best and highest offices of the Spanish government, and the cortes of Castile, Aragon, and Catalonia, evinced their disapprobation very decidedly. In Jan. 1519, the news arrived of the Emperor Maximilian's death, and a few months afterwards, Charles having been elected to succeed his grandfather, he hastened his preparations, and in May 1520 sailed from Coruña, visited Henry VIII. and Wolsey at Dover, and was crowned emperor at Aix-la-Chapelle, Oct. 23, 15

Charles found Germany disturbed by the incipient schism, which continued a source of trouble to him from the diet held at Worms, in January 1521, to which Luther was summoned to appear, and Charles gave him a safe conduct for his security until the triumph of the cause under Maurice of Saxony, and the treaty of Passau, in 1552, confirmed by the diet of Augsburg in 1555.

While Charles was absent from Spain, the towns of Castile broke out into open insurrection, headed by a young nobleman named Padilla. After being for some time successful, Padilla was defeated at Villareal, taken prisoner, and executed.

War soon after broke out between Charles and

Francis I. of France, on account of their mutual claims to the duchy of Milan. The Cortes of Castile having, in 1539, refused to vote fresh supplies, Charles dismissed them, and never called them together again. Charles's armies were triumphant in Italy, and in Feb. 1525 gained the great battle of Pavia, and made Francis I. prisoner. Francis was taken to Madrid, whence he was released in Jan. 1526, but the war broke out afresh soon after. In 1527 the troops of Charles V., commanded by the Constable de Bourbon, marched upon Rome, took and plundered it in a shameful manner, and made the Pope prisoner. The treaty of Cambrai, 1529, restored peace between Charles and Francis, who gave up all his claims to Italy and Flanders.

In 1535, Europe being at peace, Charles sailed with a large armament for Tunis, which he took, and liberated 20,000 Christian slaves. In 1536, Francis again invaded Piedmont, but was driven back; and then Charles invaded Provence, besieged Marseille ineffectually, and, having lost half his army, withdrew to Italy. In 1538 a truce for ten years was entered into between Francis and Charles. In 1539 the people of Ghent, Charles V.'s native place, revolted on account of some encroachment on their privileges. Charles asked and obtained permission of Francis to cross France on his way to chastise the revolters, which Francis granted at once. Ghent submitted, but was treated by Charles with great severity.

In 1541 Charles made an unsuccessful attack on Algiers, in which he lost his army and his fleet, and had to leave his artillery and luggage behind. In 1542 war broke out again between Francis and Charles. Francis had for an ally the Sultan Solyman, who sent Barbarossa to ravage the coasts of Italy; and Charles had Henry VIII. of England, who entered Picardy in 1544; but peace was soon afterwards concluded at Crespi between Charles and Francis. One of the terms of this peace was that both sovereigns engaged themselves to destroy Protestantism in their respective dominions. This gave rise to the first Protestant war in Germany, which, as we have already stated, was brought to a conclusion in 1552.

In 1554, Philip, Charles's son, married Mary, queen of England, upon which occasion his father made over to him the crowns of Naples and Sicily. In Oct. 1555, he resigned the sovereignty of the Netherlands, his paternal dominions, and the crown of Spain and the Indies to Philip. In August 1556, he likewise resigned the imperial crown to his brother Ferdinand; and after visiting his native place, Ghent, he embarked for Spain with a small retinue, and in Feb. 1557 he retired to the monastery of S. Justo, of the Hieronymite order, situated near Plasencia, in Estremadura. A fever, produced by the excitement occasioned by the practice of religious austerities, at length carried him off, Sept. 21, 1558.

(Antonia de Vero, *Vida y Hechos de D. Carlos I.*; Robertson's *History of Charles V.*; Botta, *Storia d'Italia.*)

CHARLES VI., emperor of Germany, born in 1685, was the son of the Emperor Leopold I. Charles II. of Spain, the last offspring of the Spanish branch of the house of Austria, dying childless in Nov. 1700, the crown of Spain was claimed for Charles in opposition to Philip of Anjou, nephew of Louis XIV., who had been named successor by the will of Charles II. This gave rise to the wars of the succession, in which England and most of the other European powers took a part. The battle of Almanza, in April 1707, decided the question in favour of Philip; but the war continued for several years in Spain, as well as in Italy, Germany, and the Netherlands, till 1714, when Charles, who in 1711 had succeeded his elder brother, Joseph I., on the imperial throne, gave up his claims to the Spanish crown by the treaty of Rastadt, retaining however the kingdom of Naples and the island of Sardinia, which last he afterwards exchanged for Sicily. In 1716 the Emperor Charles joined the Venetians in a war against the Turks, and acquired great part of Servia, as well as Belgrade and Temeswar, which were formally ceded by the Porte to Austria by the treaty of Passarowitz, in 1718, but were afterwards lost again to Austria by the peace of Belgrade, 1739.

In 1724 Charles issued the Pragmatic Sanction, by which Charles's eldest daughter, Maria Theresa, was called to the inheritance of the Austrian dominions, and her children and descendants after her.

The death of Augustus II., king of Poland, in February 1733, gave rise to a new war on the part of the Bourbons against Austria. By the peace of Vienna, in November 1735, the emperor gave up Naples and Sicily to Don Carlos, Infante of Spain, while the succession of Tuscany, after the death of Gian Gastone, the last of the Medici, who was childless, was secured to Maria Theresa of Austria and her husband Francis of Lorraine. The Emperor Charles died at Vienna, 20th October, 1740, and was succeeded in his hereditary dominions, and afterwards in the empire, by his daughter Maria Theresa, after a long and memorable war known by the name of the war of the Austrian succession. [MARIA THERESA.] Charles was the last male offspring of the house of Austria-Hapsburg.

CHARLES I., king of England, third son of James I., and Anne, daughter of Frederick II., king of Denmark, was born at Dunfermline, in Scotland, Nov. 19, 1600. His brothers having died, one in infancy, and Prince Henry in 1612 at the age of 19, Charles became heir-apparent to the crown, but was not created Prince of Wales till November 19, 1616.

The principal event in which Charles figured before his accession to the throne was his expedition to Spain in 1623 to woo the Infanta. After that match was broken off, a negotiation was begun, before the death of James in March 1625, for his marriage with the Princess Henrietta Maria, the youngest daughter of Henri IV. of France, which was solemnised by proxy, at Paris, on May 11, of the same year. Charles began his reign by retaining as his chief adviser his father's favourite, the unpopular, unprincipled, and incapable Buckingham.

The reign commenced with a contest between

the king and the parliament, the latter firmly refusing to grant the supplies demanded by his majesty for the war with Spain, until they had obtained both a redress of grievances and a limitation of the prerogative. In the course of this first contest three parliaments were successively called together and dismissed. The first met June 13, 1625, and was dissolved August 12, in the same year; the second met Feb. 6, 1626, and was dissolved June 15; the third met March 17, 1628, was suddenly prorogued June 26, was called together for a second session Jan. 20, 1629, and was finally dissolved March 10, of the same year. All this time the proceedings of the king continued to be of the most arbitrary character, and he now adopted the policy of governing without parliaments. Before entering on this line of policy, he wisely made peace, first, on April 14, 1629, with France, and secondly, on Nov. 5, 1630, with Spain.

This state of things lasted for nearly eight years. The only memorable attempt at resistance was that made by Hampden, who refused to pay his assessment of ship-money, and whose case was argued before the twelve judges in April 1637, and decided in favour of the crown. Meantime the opposition of the people of Scotland to the episcopal form of church government suddenly burst out into a flame. The first disturbances took place in Edinburgh, in the end of July 1637; and by the beginning of the following year the whole country was in a state of insurrection against the royal authority. In these circumstances Charles called together his fourth parliament, which met April 13, 1640. The temper which the members showed however induced him to dissolve it on the 5th of May following; but, the Scotch army having entered England on August 20, a fifth parliament was summoned, which met on Nov. 3, 1640, and is generally known under the name of the Long Parliament.

By this parliament the impeachments of Strafford and Laud were carried; and the militia bill, to which the king refused to agree, formed the ground on which the civil war was commenced, and which ended in the surrender of the king to the parliament, by whom he was brought to trial in Westminster Hall on Jan. 20, 1649, before what was designated the High Court of Justice. Sentence of death was pronounced against him on the 27th, and he was executed in front of the Banqueting House at Whitehall on the 30th.

(The original authorities for the history of the reign of Charles I. are very numerous. The general reader will find a sufficiently ample detail of the events of the time in the histories of Rapin, Hume, Lingard, and the 'Pictorial History of England.')

CHARLES II., king of England, son of Charles I., was born May 29, 1630. On the breaking out of the civil war, in 1642, the Prince of Wales, then only twelve years of age, was appointed to a command in the army. After the battle of Naseby the Prince retired successively to Scilly, Jersey, Paris, and the Hague, where he took up his residence, and where he received the news of the death of his father, upon which he immediately assumed the title of king. In Feb. 1649, he was proclaimed king of Scotland at Edinburgh. He arrived in the north of Scotland June 23, 1650, and, having taken the covenant, was crowned at Scone on Jan. 1, 1651. Cromwell's movements forced the king to adopt the plan of marching into England, where the battle of Worcester entirely crushed his hopes for a time, and involved his person in danger, but after many romantic adventures he effected his escape to the continent. Charles made his principal residence at Bruges and at Brussels, and at Brussels he received the news of Cromwell's death in Sept. 1658. After the resignation of Richard Cromwell, negotiations were entered into with General Monk, and on May 1, 1660, the parliament voted his restoration, and he arrived at London on May 29.

We can give only a very general sketch of the progress of events during this reign. It commenced with a complete restoration of the ancient order of things, both in church and state. The regicides were hung; the Presbyterian clergy were ejected. Dunkirk was sold to the French, war was declared against the Dutch, and in 1665 against France; but both were terminated for a time by the peace of Breda, concluded July 10, 1667. This event was speedily followed by the dismissal and banishment of Clarendon. In Jan. 1668, the treaty of triple alliance was concluded between England, Holland, and Sweden, with a view of opposing the schemes of France, almost the only meritorious act of this disgraceful reign. An alliance having been formed with France in March 1672, war was again declared against Holland; but the violent opposition compelled the king to conclude a peace in Feb. 1674, though he still maintained a close connection with the French king, from whom there is no doubt that he was in the receipt of an annual pension.

The most memorable affair of the following years was the announcement, in 1678, of the pretended Popish plot. In 1679 an alarming insurrection of the Scotch Covenanters was suppressed by their defeat at Bothwell Bridge, on June 22. From the year 1681 Charles governed without parliaments, and after the most arbitrary manner, and many of the municipal corporations in the kingdom were compelled to surrender their [illegible] into the hands of the king. These proceedings occasioned other plots, and for a participation in that known as the Rye-House Plot Lord William Russell and Algernon Sidney were executed. Charles was suddenly seized with apoplexy on Feb. 2, 1685, and expired on Friday, Feb. [illegible].

Notwithstanding the disgraceful character of Charles's reign, many of the legislative measures were of great importance. The Habeas Corpus Act was passed in 1679. By a statute passed in the twelfth year of this king's reign, the old military tenures were abolished, and one tenure of free and common socage was established for all the freehold lands of the laity. The right of wardship of infant heirs to lands held by military tenure was also abolished.

Charles II. was married on May 21, 1662, to Catherine, daughter of John IV., king of Portugal, who long survived him; but he had no children by

his queen. His natural children were—1, James, Duke of Monmouth, by Mrs. Lucy Walters, born at Rotterdam in 1649, ancestor of the Dukes of Buccleuch; 2, Mary, also by Mrs. Walters; 3, Charlotte-Jemima-Henrietta-Maria Boyle (alias Fitzroy), by Elizabeth, Viscountess Shannon; 4, Charles, surnamed Fitz-Charles, by Mrs. Catherine Peg; 5, another daughter by Mrs. Peg, who died in infancy; 6, Charles Fitzroy, Duke of Southampton, by the Duchess of Cleveland; 7, Henry Fitzroy, Duke of Grafton, by the same, ancestor of the Dukes of Grafton; 8, George Fitzroy, Duke of Northumberland, by the same; 9, Charlotte Fitzroy, by the same; 10, Charles Beauclerc, Duke of St. Alban's, by Mrs. Nell Gwynn, ancestor of the Dukes of St. Alban's; 11, Charles Lenox, Duke of Richmond, by Louisa Querouaille, a French woman, created Duchess of Portsmouth, ancestor of the Dukes of Richmond; and, 12, Mary Tudor, by Mrs. Mary Davis.

CHARLES XII., of Sweden, was born at Stockholm, in June 1682. In 1697 he succeeded his father, Charles XI., and he showed from his earliest youth great self-will and obstinacy, with an excessive fondness for military exercises. When he was eighteen, a league was formed against him by Frederic IV., king of Denmark, Augustus, elector of Saxony and king of Poland, and Peter I. of Russia, the object of which was to dismember Sweden; upon which Charles assumed the offensive, attacked Copenhagen, and in six weeks obliged the King of Denmark to sue for peace. He next attacked the Russians, who had invaded Ingria, and utterly defeated them before Narva. He next turned his arms against King Augustus, defeated him, and after several battles and negotiations, Charles, having overrun the greater part of Poland, dictated to the Diet the nomination of Stanislaus Leckzinski, who was proclaimed king of Poland in July 1744. Charles next attacked Augustus in his electoral dominions, and forced him to sue for peace, which was concluded at Leipzig in 1707, Augustus resigning the crown of Poland to Stanislaus. In September of the same year Charles marched out of Saxony at the head of 43,000 men to carry the war into Muscovy. He beat the Russians in two battles, in January and June 1708, and pursued them to Smolensk, which he reached in September. But here Charles began to experience the real difficulties of a Russian campaign. The country was *desolate*, the *roads* wretched, the winter approaching, and the army had hardly provisions for a fortnight. Charles therefore abandoned his plan of marching upon Moscow, and turned to the south towards the Ukraine, to form a junction with Mazeppa, hetman or chief of the Cossacks. Here he was hemmed in by the Russians, without provisions, and the winter setting in with unusual severity, his army, by the spring, was reduced to 18,000 men. He then laid siege to the town of Pultawa; but Peter himself appeared to relieve it, at the head of 70,000 men. Charles had now no choice but to risk a general battle, which was fought on the 8th of July, 1709, and ended in the total defeat of the Swedes, 9000 of whom were slain on the field of battle. Charles fled to the Turks, who assigned him a refuge at Bender, on the Dniester. He did not return to Sweden till 1714, when he immediately took the field against Prussia, Denmark, Saxony, and Russia, which were leagued against him, and obtained some advantages at first, but was obliged to retire to Sweden at the end of 1715. In March 1716, he invaded Norway, but was obliged by want of provisions to return to Sweden. In October 1718, he again invaded Norway, and besieged Friedrichshall, before which he was killed by a cannon-shot, Dec. 11, 1718, in his 37th year.

CHARLES XIV., of Sweden, CARL XIV. JOHAN (JEAN BAPTISTE JULES BERNADOTTE), was born at Pau in the Béarn, in Jan. 1764. He entered the army when seventeen years of age, and rose by his good conduct to the rank of adjutant, in which capacity he was serving at Marseille in 1790, when the Revolution began. Bernadotte now rose rapidly, he was soon made a colonel, chief of brigade, and general of division. He served in 1795-96 against General Clairfait and the Archduke Charles; and in 1797 under Bonaparte in Italy, to whom he was sent with a reinforcement of 20,000 men. Bernadotte distinguished himself at the passage of the Tagliamento and on other occasions; but, after the treaty of Campo Formio, feeling offended at Bonaparte having ordered away part of the troops he had brought, he tendered his resignation to the Directory, who appointed him ambassador at Vienna. In this office he behaved with so much moderation and conciliation as to cause him to be suspected by the Directory, who ordered him to hoist the tricoloured flag above the entrance of his hotel. This was done on the 13th of April, 1798, and produced a riot, in consequence of which Bernadotte left Vienna. In August 1798, Bernadotte married at Paris a younger sister of Joseph Bonaparte's wife, of the name of Clary. In the following year he was appointed Minister-at-War, but was soon dismissed, and was living unemployed at Paris when Bonaparte arrived from Egypt. Bonaparte tried to bring him into an acquiescence with his views previous to the revolution of Brumaire, but Bernadotte firmly refused. Bonaparte, having become first consul, gave Bernadotte the command of the army of the West, for the purpose of pacifying La Vendée and the other disturbed districts. After Napoleon's assumption of the empire, he made Bernadotte a marshal, and sent him, in 1804, to command the army which was stationed in Hanover, where by his moderation and kindness he laid the foundation of the good reputation which he acquired in North Germany, and which afterwards contributed materially to raise him to the throne of Sweden. From 1805 to 1809 Bernadotte was with Bonaparte in his campaigns in Germany, and at the battles of Austerlitz, Jena, Friedland, and Wagram. After the battle of Wagram he had a dispute with Bonaparte, and retired. On the English landing at Flushing, Bernadotte assumed the command of some partially raised troops to oppose them, but Bonaparte recalled him to Vienna, which created fresh dissatisfaction. Matters were however reconciled, and, on Bonaparte returning to Paris, he left Bernadotte in

command at Vienna, till the peace with Austria was ratified. At the beginning of 1810 Napoleon offered him the situation of governor-general of the Roman States, which Bernadotte accepted.

Meantime important events had taken place in the north, in which Bernadotte was to act an unexpected part. Gustavus IV., king of Sweden, had been obliged to abdicate in March 1809, on account of his incapacity. His uncle, who succeeded as Charles XIII., was childless, and the heir chosen by the States was Augustus of Holstein Augustenburg, who died suddenly in May 1810. It was necessary to choose another heir to the crown of Sweden, and Charles XIII. proposed to the Swedish Diet, assembled at Oérebro in August 1810, Marshal Bernadotte, prince of Pontecorvo, as prince royal of Sweden. On August 21, 1810, the Diet voted Jean Baptiste Jules Bernadotte, prince of Pontecorvo, to be prince royal of Sweden and heir to the throne, on condition of his adopting the communion of Augsburg. Charles XIII., at the same time, formally adopted him as his son. After some delay, occasioned by Napoleon stipulating for terms that Bernadotte did not feel warranted in acceding to, he set out for Stockholm, where he arrived Nov. 2, 1810, and on the 5th he attended the Assembly of the States, in which Charles XIII. presided. He addressed the king and the States in succession, declaring his intention to live entirely for the good of his adopted country. Within two days despatches arrived from Napoleon, demanding in the most imperious tone that Sweden should declare war against England, which was reluctantly agreed to. But Napoleon did not stop here; he demanded Swedish sailors for the French fleet, Swedish troops for the French army, the introduction of French custom house officers at Gothenburg, and other things, all of which were refused. After a series of disputes, in Jan. 1812, the French troops invaded Swedish Pomerania and the island of Rügen. An envoy was sent by Sweden to Petersburg to conclude an alliance with the Emperor Alexander, which was signed on March 24. After the war between France and Russia had begun, and about the middle of August, the prince royal repaired to Abo in Finland, to have an interview with the Emperor Alexander. It was then agreed that Sweden should land an army in North Germany, which would be joined by a corps of Russians, and that Norway should be detached from Denmark, and be annexed to the crown of Sweden in compensation for the loss of Finland. The accession of Great Britain to the treaty was solicited, and after a time obtained. The treaty was signed at Abo, Aug. 18, 1812. After the French retreat from Moscow, the Swedish cabinet signified to the French chargé d'affaires at Stockholm, that all diplomatic relations with France had ceased, and sent him his passports.

In May 1813, the prince royal landed at Stralsund with about 25,000 Swedes, and advanced towards the Elbe. He contributed materially to the success of the campaign, of which he formed the plan; he took no part in the campaign in France in 1814, but directed his efforts to the securing of Norway, which by a treaty of Jan 14, 1814, Denmark agreed to resign to Sweden, but which the Norwegians, under Christian, the crown prince of Denmark, refused to ratify. A Swedish army and fleet were at length put in motion against Christian. After some trifling actions on the frontier, the Swedes entered Norway; an armistice was concluded, and the Storthing, or general assembly of Norway, ultimately elected Charles XIII. of Sweden to be king of Norway, and Carl Johan to be prince royal. The king and prince on their parts swore to the constitution of Norway as voted by the Storthing. At the end of 1817 Charles XIII. fell ill, and on Feb. 5, 1818, he expired. Carl XIV., Johan, was immediately proclaimed, both in Sweden and in Norway, and was in due time acknowledged by all the princes of Europe.

The twenty six-years of the reign of Charles XIV. were for Sweden and Norway a period of peace and internal improvement. Every branch of the administration, the finances, the navy, the army, the roads and canals, public instruction, all have been improved. Agriculture has made great progress; Sweden, which was obliged to import large supplies of corn, now produces enough for itself, and even exports corn.

Charles John had completed his eightieth year when he was seized by an illness in January, and died March 8, 1844. His son, Oscar I., succeeded him. Upon the whole, the life of Charles John Bernadotte is one of the most instructive biographies of our own times. It affords subject for serious reflection, and is a useful comment on the history of Napoleon.

(Touchard-Lafosse, *Histoire de Charles XIV. Jean, Roi de Suède et de Norvége;* F. Schmidt, *La Suède sous Charles XIV. Jean;* Daumont, *Voyage en Suède;* Laing's *Tour in Sweden;* Count Biörnstjerna, *On the Moral State and Political Union of Sweden and Norway.*)

CHARLES'S WAIN, a name for the Great Bear. [URSA MAJOR.] This constellation was sometimes called the Waggon, both by the Arabs and Romans; but who Charles may have been we have no means of knowing.

CHARLESTON, a city and sea-port of South Carolina, in the United States of North America, is situated on a tongue of land formed by the junction of the rivers Ashley and Cooper, [illegible] 47′ N. lat., 79° 57′ W. long. The popul[illegible] 1830 was 30,289; in 1840 it had dimini[illegible] to 29,261, of whom 14,673 were slaves. T[illegible] into which the two rivers fall is 2 miles w[illegible] and 7 miles long from the city to the A[illegible] A sand-bank extends across the entrance [illegible] bay, but there are three or four passages thro[illegible] it, the deepest of which has 17 feet of water at high tide. Sullivan's Island on the north, and Folly Island on the south, partly shelter the bay; but storms from the east sometimes do damage to the shipping at the wharfs. Three forts, constructed on different points, defend the approach to the city from the sea.

The ground on which Charleston is built is only about 7 feet above high tide. The streets extend from north to south, between the two rivers, and are intersected by other streets from

east to west. Many of the streets are wide, and the houses large and handsome, some of brick, and some of wood, with piazzas and verandahs; and several of the streets are bordered on each side with the Pride of India and other handsome trees. Among the public buildings are—the city-hall, exchange, court-house, gaol, almshouses, orphan-asylum, theatre, 2 college-halls, and 2 arsenals; besides 24 places of public worship, of which 5 are Episcopal, 4 Presbyterian, 4 Methodist, 3 Roman Catholic, 2 Baptist, 2 German Lutheran, 1 French Protestant, 1 Jews' Synagogue, and 1 Bethel. Charleston College, founded in 1705, had, in 1846, 4 professors, 67 alumni, 40 students, and a library of 3000 volumes. The South Carolina Medical College had, in 1846, 8 professors, and 158 students.

The commerce of Charleston is extensive. The shipping, in 1840, amounted to 29,250 tons. The exports, in 1842, amounted to 7,525,723 dollars; the imports, to 1,359,465 dollars. The number of bales of cotton exported was 269,606. Three lines of packets ply between Charleston and New York.

A canal, 22 miles long, extends from Charleston Harbour to the river Santee, and the South Carolina Railroad extends from Charleston to Hamburg, 136 miles.

(Haskel and Smith, *United States' Gazetteer; American Almanac*, 1847.)

CHARLESTOWN. [MASSACHUSETTS.]

CHARLEVILLE. [ARDENNES.]

CHARLEVOIX, PIERRE FRANÇOIS XAVIER DE, born in 1682, was educated by the Jesuits, admitted into their order, and in 1720 was appointed to one of the Jesuit missions in Canada; and, embarking at Rochelle, he arrived at Quebec in the autumn of that year. He explored a large part of Canada, visited St. Domingo, and reached France in Dec. 1722. He died at La Flèche in 1761.

He was a laborious compiler, and his style is somewhat heavy and diffuse. His principal work is the 'History of New France,' which contains a good account of all the French establishments in Canada and North America, together with a journal of his own travels in that part of the world; the latter portion was translated into English in 1760, under the title of 'Journal of a Voyage to North America.' He wrote also a 'History and Description of Japan,' which is chiefly taken from Kämpfer; a 'History of St. Domingo,' taken from a MS. of Father le Pers; and a 'History of Paraguay.'

CHARLIEU. [LOIRE.]

CHARLOCK, the vulgar name of *Sinapis nigra* and *Sinapis alba*, common annual weeds which infest corn-land. They are so easily destroyed by a little care, that their presence can only be looked upon as evidence of slovenly agriculture.

CHARLOTTENBURG. [BRANDENBURG.]

CHARLOTTESVILLE. [VIRGINIA.]

CHAROLLES. [SAÔNE-ET-LOIRE.]

CHARON, the fabulous boatman who conveyed the shades of the departed across the rivers which girt the infernal regions.

CHARON, a native of Lampsacus, on the Hellespont, one of those numerous Greek historical writers now only known by their names and a few fragments. Charon lived before Herodotus, who was born B.C. 484, and he was younger than Hecatæus, who was probably in the vigour of his life about B.C. 500. Charon wrote a history of his native town, a history of Persia, a history of Crete, and other works. The loss of the Cretan history is to be regretted, as we possess so few materials for the ancient state of that island. (Creuzer, *Historicorum Græcorum Antiquiss. Fragmenta*, &c., Heidelberg, 1806, 8vo.)

CHARONNE. [SEINE.]

CHART, or SEA-CHART, a hydrographical map, or a projection of some part of the sea, in plano, for the use of navigation. Fournier, in his 'Hydrographie,' fol., Paris, 1667, p. 505, ascribes the invention of charts to Henry, son of John, king of Portugal: certain it is that marine charts appear first to have issued from the Portuguese. Bagford says, the first step that was made toward a knowledge of our own coasts was by an almanac, with a chart of the coasting part of England, printed on vellum or parchment, by Wynken de Worde, 1520, and bound in a small portable volume. This was the first he had seen of the kind. The generality of the early Portuguese charts seem to have been made toward the close of the 15th century. Different kinds of charts and maps are described under MAP.

CHARTA, MAGNA. [MAGNA CHARTA.]

CHARTE, from *charta*, 'paper,' was the name of letters of franchise granted by the kings of France, during the middle ages, to several towns and communities, by which they received certain municipal privileges, such as the free election of their local magistrates and others. The word Charte is now used in France to signify the solemn acknowledgment of the rights of the nation made by Louis XVIII. on his restoration in 1814. The Charte is the fundamental law of the French constitutional monarchy. One article of this Charte having given occasion to a false interpretation, of which the ministers of Charles X. availed themselves to issue the ordonnances which gave rise to the revolution of July 1830, was altered on the accession of Louis-Philippe, and it was clearly explained that 'the king issues the necessary ordonnances and regulations for the execution of the laws, without having the power in any case to suspend the course of the law or to delay its execution.' The 'Charte de 1830,' with this and one or two more modifications of minor importance, was sworn to by Louis-Philippe on the 9th of August, 1830. A law of the 9th of December, 1831, abolished the hereditary peerage; and the members of the Chamber of Peers are now only for life.

The general outline of the government of France bears a resemblance to our own, being an hereditary constitutional or limited monarchy. The king has the supreme executive power; and the legislative power is in the king, the Chamber of Peers, and the Chamber of Deputies. Its general constitution is defined in the charter granted by Louis XVIII. upon his restoration in 1814; modified in 1830, after the revolution which

drove out the elder branches of the Bourbons; and further modified since that time. The Charte, as modified after the revolution of 1830, and, as it now stands, consists of sixty-seven articles, arranged under seven heads.

CHARTER. This word is from the Latin word *charta*, a word of uncertain origin; the Greek form of the word is *chartes* (χάρτης). Charta appears to have signified writing-material made of papyrus. The term was afterwards applied, not only to the materials for writing, but to the writing itself, as to a letter or the leaf of a book. In English law it was used to denote any public instrument, deed, or writing, being written evidence of things done between man and man, and standing as a perpetual record. (Bracton, lib. 2, c. 26.) Among the Saxons such instruments were known as *gewrite*, or writings.

Charters are divided either into charters of the crown, or charters of private persons.

Royal charters were used at a very early period, for grants of privileges, exemptions, lands, honours, pardons, and other benefits that the crown had to confer; and thus the term became restricted to such instruments as conferred some right or franchise. These instruments did not differ in form from letters patent, being usually addressed by the king to all his subjects, and exposed to open view, with the great seal pendent at the bottom; but such as contained grants of particular kinds were distinguished by the name of charters.

The charter of William the Conqueror settled the religion of the state, and provided for its peace and government, for the administration of justice, the punishment of criminals, and the regulation of markets; it confirmed the titles to lands, and the exemption of the tenants in chief of the crown from all unjust exaction and from tallage. The words are those of a lawgiver appointing and commanding.

The charters of liberties granted by Henry I., Stephen, Henry II., John, Henry III., and Edward I., either make new provisions, or confirm, enlarge, and explain existing laws, and relate to the freedom and good government of the people, and all the most important interests of the country. Some of them are still regarded as declarations of the rights and privileges which the people of England have enjoyed for centuries*. [MAGNA CHARTA.]

These charter-laws, though often expressed to have been made by the advice of the king's council, implied a legislative power vested in the crown; and as royal prerogative became restrained, and the public liberties enlarged, legislation by charter was gradually superseded by the statutes and ordinances made in parliament. During the reigns of Henry III. and Edward I. laws were promulgated in both forms; but since that time statutes and ordinances have been the only records of legislation—not differing materially, at first, either in form or in the nature of the authority from which they emanated, from the charters of earlier reigns, but gradually assuming their present character as acts agreed to by the entire legislature.

The power of the crown in granting charters at an early period was exercised in conferring immunities on boroughs and municipal bodies, of which the greatest was that of sending representatives to parliament. But, though the king's charters have conferred upon boroughs the right of sending members to parliament, it was held in several cases, by the House of Commons, that the right of voting by the common law could not be varied by charters from the crown. Between the reigns of Henry VIII. and Charles II. no less than 180 members were added to the House of Commons by royal charter, the last borough upon which that right was conferred in this manner having been Newark, in 1673. Since that time the parliamentary representation has been regulated by act of parliament, as in the case of the Reform Act of 1832. Municipal corporations have also been regulated by the Municipal Corporations Act; but a power has been reserved to the crown, with the advice of the privy council, to grant charters of incorporation to other towns, upon the petition of the inhabitants, and to extend to them the provisions of the Municipal Corporations Act (5 & 6 Will. IV. c. 76, s. 141).

Charters were formerly granted by the crown, which established monopolies in the buying, selling, making, working, or using certain things; but this practice was abolished by Act 21 James I. c. 3. [MONOPOLY.]

The crown has the prerogative of incorporating universities, colleges, companies, and other public bodies, and of granting them, by charter, powers not inconsistent with the law of the land. But, as the most considerable bodies ordinarily require powers which no authority but that of parliament is able to confer, such corporations as the East India Company and the Bank of England, which were originally established by royal charter, have long since derived their extraordinary privileges from acts of parliament, as well as other public companies which have been incorporated in the first instance by statute.

Charters of private persons are the title-deeds of lands, many of which are the ancient grants of feudal lords to their tenants. A charter of the crown, granted at the suit of the grantee, is construed most beneficially for the crown, and against the party; but a private charter is construed most strongly against the grantor.

(Introduction to *Rotuli Chartarum*, 1837; Coke, *1st Inst.* 6 *a*, 7 *a*; *2nd Inst.* 77; Preface to *Statutes of the Realm*, &c.)

CHARTER-HOUSE. [LONDON.]

CHARTER-PARTY. [SHIPS.]

CHARTISTS, the name given to a political party in England, whose views are contained in the 'People's Charter.' The principal points in this proposed charter are, universal suffrage, vote by ballot, annual parliaments, the division of the country into equal electoral districts, the

* They are printed at length in the first volume of the 'Statutes of the Realm,' published by the Record Commissioners. With the exception of one charter in the 25th Edward I., they are all in the Latin language. In the Tower of London there are charter rolls of all royal charters from 1199 to 1484, and in the Rolls Chapel from 1483 to 1516. A part of these rolls has been published by the Record Commissioners.

abolition of property qualification in members, and paying them for their services.

There is nothing new in the principles or details of the People's Charter. In 1780 the Duke of Richmond introduced a bill into the House of Lords for annual parliaments and universal suffrage. In the same year the electors of Westminster appointed a committee to take into consideration the election of members of the House of Commons, and in their report they recommended the identical points which now constitute the main features of what is called the People's Charter. The society of the Friends of the People, established in 1792, three years afterwards published a declaration which recommended a very large extension of the suffrage. In seasons of national distress, the amendment of the representative system has always been warmly taken up by the people of England.

CHARTRAIN, that part of the district of Beauce, which is now comprised in the department of Eure-et-Loir. Chartres was its capital.

CHARTRES, the capital of the department of Eure-et-Loir and of the former district of La Beauce, in France, stands on a hill above the Eure, 48 miles S.W. from Paris, in 48° 26′ 54″ N. lat., 1°.30′ 55″ E. long., and has 16,383 inhabitants. It is a very ancient city. Under the Roman dominion it bore the name of Autricum, but in the fourth century this name was replaced by that of the people, the Carnutes, whose capital it was. The Eure flows here in two channels, one within and the other without the ancient ramparts, which are surrounded by a circuit of public walks. Chartres is divided into an upper and a lower town. The upper town has some tolerably commodious streets, and contains the principal public edifices: the lower town is ill-built and ill-laid out; the streets which unite the two are very steep.

The finest edifice in Chartres is the cathedral, which is the largest church in France, and one of the most vast and imposing structures of the middle ages. It was commenced about 1020, by Bishop Fulbert, but dedicated only in 1260 when still unfinished, one of the spires not having been erected till the 16th century. The principal front, which is 164 feet in breadth, presents two square towers, surmounted by two lofty octagonal pyramids, and separated by an interval of 55 feet. The old spire, which rises to the height of 374 feet, is of plain architecture, but cased with stone curiously carved like the scales of a fish, and appears to loom towards the spectator on whatever side he stands. The new spire is 413 feet high, built in the florid style, and so much admired as to have become proverbial for its beauty. The part of the front between the towers has a triple portal with pointed arches, and adorned with statues. Above the doorways are three arched windows with stained glass, and still higher a superb rose window. The entrances on the north and south sides consist of triple projecting porticoes with doorways between them; over these are windows, and a rose as before. The interior of the church is admirable for the justness of its proportions; it is richly decorated, and lighted through above 130 painted glass windows, most of which date from the 13th century. Among many decorations of the interior must be named the screen that separates the choir from its aisles, the tracery work on which has been compared to 'point lace in stone.' The inner dimensions of the cathedral are as follows:—length, 436 feet; breadth at the transept, 213 feet; height to the apex of the roof, 115 feet. Under the cathedral is a subterranean church, the descent to which is by five different staircases. The cathedral was covered with a metal roof in 1841, the old roof having been destroyed by fire in 1836.

Other remarkable buildings are the church of St. Père, and that of St. André, which is now used as a storehouse for hay and straw; the barracks; the public library, which contains 40,000 volumes; the general hospital; and the residence of the prefect. The town is the seat of a bishop, and has tribunals of first instance and of commerce, communal and ecclesiastical colleges, and a fine botanical garden.

Chartres has the best regulated corn-market in France. The measuring and selling the grain, and receiving payment for it, is managed by a corporation of women, who in an hour, at most, effect all the transactions of the market, often comprising the sale of 6000 quintals of wheat, besides what is sold by sample and delivered at the stores. The town has also an important market for wool. Some woollen goods and hosiery are manufactured; a good quantity of leather is made, and there are several dye-houses. The railway now in course of construction from Paris to Brest passes through Chartres.

(*Dictionnaire de la France;* Balbi, *Géographie;* Murray's *Handbook of France.*)

CHARTREUSE. [Iserre.]

CHASE, that part of a gun which is between the ring near the trunnions, and the astragal mouldings near the muzzle.

CHASIDIM. [Assidians.]

CHASING OF METALS. Metallic goods are generally made in one of three ways—by casting in moulds, by forging or turning in masses, or by pressing or stamping out of thin sheets. The last of these three has been greatly developed at Birmingham within the last few years. Either the entire article receives its form from the sheet by stamping, or, when roughly formed, it receives an ornamental device by a process of chasing. For the latter variety of work, steel blocks, punches, or bosses, are provided, each one presenting at the end a definite form, such as curved, angular, square, &c.; and these are fixed or held with the finished end uppermost. The article to be ornamented, which is always of a thin, hollow kind, is placed face uppermost on the punch; a pattern or design is drawn on the face of the article, and the adjustment is so made that the punch beneath shall follow the course of the lines in the device. A fine hammer is then employed to strike the piece of thin metal; the effect of which is, that the metal is forced upwards in a fine burr or protuberance at every place where there is a punch beneath it. By shifting the piece of metal so that different parts of its lower surface may in succes-

sion be brought over the punch, and by changing the form of the punch when necessary, a protuberant design or pattern in relief is formed on the article of metal.

CHASMO'DIA, a genus of coleopterous insects of the section *Lamellicornes* (*Scarabæus*, Linn.), and sub-section *Xylophili* (Latreille). Locality, South America.

CHASTELLET, GABRIELLE-E'MILIE LE TONNELIER DE BRETEUIL, MARQUISE DU, the translator of Newton into French, was the daughter of Baron de Breteuil, and was born in 1706. In what manner she was led to study mathematics is not stated. She also became a proficient in Latin, English (in which Voltaire, as he tells us, was her instructor), and Italian. She was married very early to the Marquis du Chastellet, and died August 10, 1749, her death having been hastened by close application to her translation of Newton. She died in the palace of Luneville, at the court of Stanislaus, where Voltaire also was then residing. Her *liaison* (as the French call it) with Voltaire furnished sundry anecdotes for the scandalous chronicles of her day. The state of manners, however, and in particular the method in which marriage was contracted among the French, are too well known to require any comment.

In 1738 Madame du Chastellet wrote, for the prize of the Academy of Sciences, on the nature of fire. In 1740 she published at Paris her 'Institutions de Physique,' addressed to her son, and a second edition appeared at Amsterdam in 1742.

The translation of Newton was published at Paris in 1759, with a 'préface historique,' and an *éloge* in verse by Voltaire, who probably owed to Madame du Chastellet the smattering of knowledge upon which he wrote his 'Elémens de la Philosophie de Newton,' published in 1738. From it we learn that the translation was submitted to the revision of Clairaut.

CHATEAUBRIAND. [LOIRE-INFE'RIEURE.]

CHATEAU-CHINON. [NIE'VRE.]

CHATEAU-D'OLERON. [CHARENTE-INFE'RIEURE.]

CHATEAUDUN. [EURE-ET-LOIR.]

CHATEAU-GONTHIER. [MAYENNE.]

CHATEAULIN. [FINISTE'RE.]

CHATEAU-RENARD. [BOUCHES-DU-RHONE.]

CHÂTEAUROUX, capital of the department of Indre, in France, stands on a rising ground in a vast plain, near the left bank of the Indre, 164 miles S. from Paris by railway through Orleans and Vierzon, and has 13,551 inhabitants. The town, which was formerly ill-built and dirty, has been within the last twenty years greatly improved. The streets are now straight and wide, and well paved; and there are several spacious squares. The principal buildings are—the old castle, which gave origin to the town, and which now serves for government offices; the town-house; the theatre; the church of the Cordeliers; and the residence of the prefect, which adjoins the old castle. Châteauroux is one of the principal seats of cloth manufacture in the centre of France; its cloths are manufactured from excellent wool, but are more remarkable for strength than for fineness. Cotton hosiery, worsted, tiles, paper, and leather are also manufactured; and there is a good trade in corn, iron, wool, cattle, sheep, &c. The town has tribunals of first instance and of commerce, a college, and a consultative chamber of manufactures. (*Dictionnaire de la France*; Macgregor's *Statistics*.)

CHATEAU-THIERRY. [AISNE.]

CHATELLERAULT. [VIENNE.]

CHATHAM, a market-town, port, and parliamentary borough, in the county of Kent, is situated on the south bank of the Medway, and is continuous with the city of Rochester, which adjoins it on the west. It is about 30 miles E. by S. from London. The population of the town in 1841 was 21,431, but this included part of Brompton (1,435) and the barracks and hospitals (6528). The entire parish of Chatham, which is partly within the jurisdiction of the city of Rochester, was 15,411. The population of the parliamentary borough, which returns one member to the House of Commons, was 17,903.

The streets of the town are generally narrow, and the houses mean; but a good deal of improvement has been made in the buildings of late years. The parish church was almost entirely rebuilt in 1788, and another church was erected in 1821. The barracks and military hospitals are partly in the town of Chatham and partly within the lines of fortification which inclose the dock-yard.

The Medway, opposite to Chatham and Rochester, has a channel of considerable width, in which the highest tides rise 18 feet and the lowest 12 feet. The dock-yard is at Brompton, a short distance north from Chatham. It is surrounded on the land side by lines of fortification, and is nearly a mile in length. There are four wet-docks capable of receiving vessels of the largest class; an extensive arsenal; barracks on a large scale for artillery and engineers, infantry, and royal marines; a park of artillery; magazines and store-houses; besides a handsome dock-chapel. The principal mast-house is 240 feet long by 120 wide. The rope-house is 1128 feet in length, and 47½ wide, in which cables 100 fathoms in length and 25 inches in circumference are made. There is a school for engineers, which was established in 1812, in which young officers and recruits of the engineer service are trained to practical knowledge of their duties.

The dock-yard was established by Queen Elizabeth, previous to the projected invasion of the Spanish Armada, on the site of the present Ordnance Wharf, or Old Dock. The situation in which the dock-yard is now situated was adopted in 1622. In 1667 De Ruyter, the Dutch admiral, having taken Sheerness, despatched his vice-admiral, Van Ghent, with 17 light ships and 8 fire-ships, to destroy Chatham. He broke a chain stretched across the Medway, and burnt and sunk some ships, but was obliged by the fire from Upnor Castle to sail back again without doing further damage.

CHATHAM, EARL OF. [PITT.]

CHATHAM ISLANDS are a group of islands situated in the Pacific, east of New Zealand, be-

tween 43° 40′ and 45° 20′ S. lat., and 176° and 177° 20′ W. long. They consist of one large island, two of moderate extent, and several smaller islands. The largest is called Warekauri, and is in the form of a hammer with a short handle. The northern part, which represents the iron portion of the hammer, is about forty-eight miles long from east to west: that which extends from it southward does not much exceed thirty-six miles in length. Dieffenbach, by a rough computation, gives the area at 477 square miles, of which, however, a considerable part consists of lakes, lagoons, &c., so that the land is not more than 387 square miles.

On the western side of the island is a large bay, called Waitanga Bay, where there are five harbours behind some projecting headlands. On the southern shores of the bay is Waitanga Harbour, which has excellent anchorage in between five and twelve fathoms. On the northern side of Waitanga Bay are four harbours, not far from one another, one of which is frequently visited by vessels, and affords complete protection against all winds. There are no harbours on the eastern and southern coast except at Oïnga, the south-eastern headland of the island, where the hills offer some protection against wind and sea: this place is frequently visited by whalers.

The climate is very mild. In winter (from May to July) the thermometer never rises above 60°, nor descends below 45°, after eight o'clock in the morning.

The inhabitants cultivate potatoes, different kinds of turnips, cabbages, taro (*Arum esculentum*), some tobacco, New Zealand flax (*Phormium tenax*), and abundance of pumpkins, which form a great part of their food. There are several kinds of trees, which are of the species found in New Zealand. Both the spermaceti whale and black whale are seen in great numbers off the shore, and visit the east coast, especially in June and the following months.

These islands were discovered in 1791 by Broughton, of his majesty's ship Chatham, who took possession of them in the name of the King of England. They were afterwards frequently visited by whalers, and in 1840 a whaling station was established at Oïnga. Broughton estimated the population at 1200 individuals; but Dieffenbach thinks that in 1840 not more than ninety of the aboriginal inhabitants were to be found there. The reduction of their number is to be ascribed to the state of slavery to which they have been subjected by two tribes of the New Zealanders. As the Chatham Islands are only about 450 marine miles distant from Port Nicholson in Cook's Strait, two New Zealand chiefs induced their tribes to go to the Chatham Islands, and effected their emigration by hiring a British brig for that purpose. The aborigines were reduced to slavery with little opposition, and were divided among the New Zealand tribes, as well as the land. The number of the New Zealanders who thus settled in the Chatham Islands is said to have been 800; and, by means of the labour of their slaves, a portion of Warekauri was soon brought into cultivation, so that they could furnish supplies for three or more vessels which annually resort to the island. A part of Warekauri has been purchased from the chiefs by British citizens, and the island is considered an appendage of the colony of New Zealand.

South-east of Warekauri lies Rangi-haute, or Pitt's Island, which is about twelve miles long and eight broad. It has no harbour, and is stated to be inhabited by a small number of aboriginal natives. The other islands are mere rocks.

(Dieffenbach's 'Account of the Chatham Islands,' in *London Geographical Journal*, vol. ix.)

CHATILLON-SUR-INDRE. [INDRE.]

CHATILLON-SUR-SEINE. [CÔTE-D'OR.]

CHATRE, LA. [INDRE.]

CHATTELS (in Law Latin, *Catalla*). This term comprehends all moveable property, and also all estates in land which are limited to a certain number of years or other determinate time. All moveable goods, as horses, plate, money, and the like, are called chattels personal. Estates or interest in land, which are comprehended in the term chattels, are called chattels real. 'Goods and chattels' is a common phrase to express all that a man has, except such estates in land as are freehold estates; but the word chattels alone expresses the same thing as 'goods and chattels.' The word goods is merely a translation of the Latin word Bona, which was used by the Romans to express all property, and generally all that a man was in any way entitled to. ('Dig.' 50, tit. 16, s. 49.) Chattels of each description pass to the personal representatives of the deceased proprietor, and are comprehended under the general term 'Personal Property.' By 1 Vict. c. 26, no person under twenty-one years of age can dispose of any thing by will. Before this act passed a male of the age of fourteen, and a female of the age of twelve, could make a will of chattels.

CHATTERTON, THOMAS, was born at Bristol, Nov. 20, 1752. In August, 1760, he was admitted into Colston's school, Bristol, where he remained seven years, during which time he wrote some minor pieces of poetry, chiefly satirical, and the celebrated De Bergham Pedigree. In July 1767, he left the school, and was bound apprentice to Mr. John Lambert, attorney, of Bristol, for seven years. While in Mr. Lambert's service, he sent to a Bristol newspaper, in Oct. 1768, on the occasion of the completion of a new bridge at Bristol, an article purporting to be the transcript of an ancient MS., entitled 'A Description of the Fryars first passing over the Old Bridge, taken from an Ancient Manuscript.' This paper was traced to Chatterton, who, after several contradictory statements, asserted that he had received the paper in question from his father, who had found it, with many others, in some chests in Redcliff Church, where they had been deposited in the muniment room, in 'Canynge's cofre.' Mr. Catcott, a gentleman fond of antiquarian researches, and Mr. Barrett, surgeon, who was engaged in writing a history of Bristol, now to some extent patronised him, and to the former he soon produced more ancient poems; among which were 'The Bristow Tragedy,' Rowley's Epitaph upon Mr. Canynge's Ancestor, with some others; and

to Mr. Barrett he furnished an account of every church and chapel in Bristol, which he stated to have been found by him among the old parchments.

His attention however was not confined to the Rowley poems. He wrote various pieces, chiefly satirical, and several essays, both in prose and verse, which he forwarded to the periodicals of the day. Most of his pieces appeared in the 'Town and Country Magazine.' Wishing to leave his profession, he made an application, in March 1769, to Mr. Horace Walpole, offering to supply him with some accounts of a succession of painters who had flourished at Bristol, which Chatterton affirmed to have been lately discovered, with some old poems, in that city. Walpole first accepted the offer, but, probably suspecting a deception, neglected to answer Chatterton's application for assistance; upon which Chatterton, in a bold letter, which Walpole termed 'singularly impertinent,' demanded back his MSS. and letters, which were returned.

Chatterton soon afterwards went to London, to earn his livelihood by his literary labours. He was at first tolerably successful; but the light superficial essays and pamphlets which he produced did not make sufficient impression to insure him remunerating employment. His writings during his residence in London were numerous, but they failed to procure him a comfortable income. In the month of July, 1770, he removed from Shoreditch, where he had lodged, to an apartment in Brook Street, Holborn, where, being literally in a state of starvation, he terminated his existence by poison, Aug. 24, 1770. He was buried on the following day, in the burying-ground of Shoe Lane Workhouse.

Chatterton was only seventeen years and nine months old when he died. The controversy as to the Rowleian poems engaged numerous writers of the day; but no one now believes them to be any thing else than the production of Chatterton himself. The last edition of Chatterton's works is in 3 vols., 1803.

CHAUCER, GEOFFREY, was born in London in 1328, was educated at Cambridge and at Oxford, and, as some say, at Paris; and studied the law in the Inner Temple. He lived much in the court of Edward III., in familiar intercourse with several members of the king's family, and was employed in the public affairs of the realm. But it is as a writer, and especially as a poet, that he claims the notice of posterity. Most of the scholars of his age were accustomed to write in Latin, but Chaucer wrote in the vernacular language of his own age and country. We shall narrate the few known facts of his life, and then add the titles and dates of his principal works.

In 1359 he served in France in the army led thither by Edward III. for the conquest of that kingdom, and was taken prisoner, but the length of his captivity is not known. In 1366 he married Philippa Roet, the sister of Katherine Swynford, afterwards the wife of John of Gaunt. In 1373 he was in an embassy to Genoa, and on this journey he probably saw and conversed with Petrarch. On his return he was made comptroller of the Port of London. In 1377 he was employed in an embassy to negotiate a marriage between Richard, prince of Wales, and Mary, daughter of the King of France. In 1366 he was, knight of the shire of Kent. Soon after this, Chaucer appears to have been in difficulties; his wife died; and in 1388 he was compelled to sell two of the pensions which had been conferred on him. In 1389, soon after the accession of Richard II., he was made clerk of the works, and in this capacity had to superintend the repairs of St. George's Chapel, Windsor. In about two years he was dismissed from this office, and appears to have then retired wholly into private life, residing, as is said, at Woodstock, and at Donnington Castle, near Newbury, at which place it is said he wrote his 'Canterbury Tales.' In 1399, four days after Bolingbroke ascended the throne, a small pension that he still had was largely increased; upon which he removed to a house near Westminster Abbey, where he died Oct. 25, 1400, and was buried in Westminster Abbey.

His first works, 'The Court of Love,' and 'Troilus and Cresseide,' were produced at the university. The 'Complaint of the Black Knight,' and 'Chaucer's Dream,' must have been written, the first a little before 1359, and the second shortly after, as they refer to the courtship and marriage of John of Gaunt with Blanch of Lancaster; and in 1369 the 'Book of the Duchess,' was produced on her death. In 1376 he wrote the 'House of Fame' since modernised by Pope; and at dates not very well ascertained, but after the accession of Richard II, 'The Flower and the Leaf,' and the 'Legend of Good Women.' The 'Canterbury Tales' were written probably during the years 1393, 1394, and 1395.

The 'Canterbury Tales' were printed by Caxton, but it was not till 1542 that any general collection of his writings was made and committed to the press; they have been often reprinted. Mr. Tyrwhitt's edition of the 'Canterbury Tales' is celebrated for the greater purity of the text, and for the valuable illustrations which he has annexed to it.

CHAUCI, a nation of ancient Germany, who lived N.E. of the Frisii, along the coast of the North Ocean, and on both banks of the Visurgis (Weser), and as far as the Albis, or Elbe. To the S. they bordered upon the Catti. The Chauci do not appear to have ever been permanently subjugated by the Romans. (Tacitus, *Germ.*, 35; *Annal.*, i. 60, ii. 17, xi. 18.)

CHAUDES-AIGUES. [CANTAL.]

CHAUDIE'RE. [CANADA.]

CHAUFEPIE. [BAYLE.]

CHAUFFAILLES. [SAÔNE-ET-LOIRE.]

CHAUMONT-EN-BASSIGNY. [MARNE, HAUTE.]

CHAUNY. (Population, 5154.) [AISNE.]

CHAUSSEY, a small island in the English Channel, belonging to France, is the principal of a cluster of islands nearly opposite to the town and port of Granville. Its length is about 10 miles, and its breadth 4. The island is inhabited only in summer by workmen from Granville to quarry granite, which is here found of good quality. Many of the islets of the group are inhabited.

CHEADLE. [STAFFORDSHIRE.]

CHECK, a species of chequered cloth, in which coloured lines or stripes cross each other rectangularly, like a chess-board. This manner of beautifying webs is very ancient; for many of the figures in Rosellini's 'Egypt' are dressed in chequered cloths. The compartments of a checked pattern are sometimes formed by differently coloured threads, and sometimes by threads of different quality. Cotton handkerchiefs checked of various colours have been manufactured in India, probably from time immemorial, under the name of *pullicates*. The ground of these has usually a pale buff colour, and is woven with the nankin yellow cotton. Checks in this country are mostly manufactured for the coarser purposes of seamen's shirts, aprons, and bed-gowns of females in the lower ranks of life. The demand for them is very large.

Mr. Robert Kay, of Bury, son of the ingenious but persecuted inventor of the fly shuttle, invented the 'drop box,' for making checks, by means of which the weaver could at pleasure use any one of three shuttles without rising from his seat, each shuttle containing a differently coloured weft.

CHEDDAR. [SOMERSETSHIRE.]

CHEESE, caseous matter, or casein, is one of the component parts of milk, in which, when uncoagulated, it exists in solution. When separated from the milk by chemical means, it is found to be a dry substance of an amber colour, soluble in water, in alcohol, and weak solutions of the alkalies. Caseum in solution, either in milk or in water, is coagulable by acids, especially when heated. According to Gay-Lussac and Thénard, caseum consists of—carbon, 59.781; oxygen, 11.409; hydrogen, 7.429; nitrogen, 21.381.

Milk consists of three distinct substances, which begin to separate from one another as soon as it is exposed to the air. The oily part rises to the surface by its less specific gravity, and, when it is collected into a solid mass by agitation, it forms butter; the caseum coagulated by the action of any acid is called curd, and when pressed becomes cheese. The fluid which remains is the serum, or whey.

In the making of cheese the most important circumstance is the nature of the pasture on which the cows are fed, yet much depends on the mode in which the different stages of the fabrication are managed; and hence the great superiority of the cheeses of particular districts or dairies over those of others, without any apparent difference in the pasture. By skill and great attention excellent cheeses are made even in places where the pastures are not considered so well adapted to produce milk of a proper quality, as well as where the cows are chiefly kept tied up in stalls, and fed with natural and artificial grasses, roots, and vegetables.

The first process in making cheese is to separate the curd from the whey, which may be done by allowing the milk to become sour; but the cheese is inferior in quality, and it is difficult to stop the acetous fermentation, and prevent its running into the putrefactive. Various substances added to milk will soon separate the curd from the whey. Some vegetables contain acids which readily coagulate milk, such as the flowers of the *Galium verum*, or Lady's Bed Straw, hence called *Cheese-Rennet*; but the best curdler of milk is the gastric juice of the stomach of a sucking calf. The only difficulty is in collecting and keeping it from putrefaction, which begins from the instant the stomach is taken from the calf. The preparation of the *rennet*, as it is called, is therefore a most important part of the process of cheese-making. The following may be considered as the simplest and perhaps the best. As soon as a sucking calf is killed, the stomach should be taken out, and if the calf has sucked lately it is all the better. The outer skin should be well scraped, and all fat and useless membranes carefully removed. It is only the inner coat which must be preserved. The coagulated milk should be taken out and examined; and any substance besides curd found in it should be carefully removed. The serum left in it should be pressed out with a cloth. It should then be replaced in the stomach with a large quantity of the best salt. The skins, or vells as they are called, are then put into a pan, and covered with a saturated solution of salt, in which they are soaked for some hours; but there must be no more liquor than will well moisten the vells. They are afterwards hung up to dry, a piece of flat wood being put crosswise into each, to stretch them out. They should be perfectly dried, and look like parchment. In this state they may be kept in a dry place for any length of time, and are always ready for use. In some places, at the time of making cheese, a piece of a vell is cut off and soaked for some hours in water or whey, and the whole is added to the warm milk. In other places, pieces of vell are put into a linen bag, and soaked in warm water until the water has acquired sufficient strength, which is proved by trying a portion of it in warm milk.

There are different kinds of cheese, according to the mode of preparing it. Soft and rich cheeses are not intended to be kept long; hard and dry cheeses are adapted to be kept, and stored for provisions. Of the first kind are all cream cheeses, and those soft cheeses called Bath cheeses and Yorkshire cheeses, which are sold as soon as made, and if kept too long become soft and putrid. Stilton and Gruyère cheeses are intermediate; Parmesan, Dutch, Cheshire, Gloucestershire, and similar cheeses are intended for longer keeping. The poorer the cheese is, the longer it will keep; and all cheese that is well cleared from whey and sufficiently salted will keep for years.

The Gruyère and Parmesan cheeses differ only in the nature of the milk, and in the degree of heat given to the curd in different parts of the process. Gruyère cheese is entirely made from new milk, and Parmesan from skimmed milk. In the first nothing is added to give flavour; in the latter saffron gives both colour and flavour: the process in both is exactly similar.

The process of making cheese may be stated generally to consist in heating the milk to about blood-heat (95° to 100° Fahr.), when the solution of rennet is well mixed with it. The coagulum, or curd, having been formed, which may be in

about half an hour, it is cut into slices, the heat raised to about 135°, and after remaining about an hour at that temperature, and being stirred with a staff, the curd is found to be broken into small pieces. It is then collected on a cloth woven with wide interstices, or a sieve, to allow the whey to drain from it. When sufficiently drained, the curd is put in a wide hoop, shallow barrel, box, or something of the kind, and subjected to the action of the cheese-press. Sometimes the curd is mixed with salt, and sometimes salt is rubbed on the cheese after it is made.

In Cheshire the making of cheese is carried on in great perfection, and the greatest pains are taken to extract every particle of whey. For this purpose, the curd is repeatedly broken and mixed, the cheeses are much pressed, and placed in wooden boxes which have holes bored into them. Through these holes sharp skewers are stuck into the cheese in every direction, so that no particle of whey can remain in the curd. The elastic matter formed also escapes through these channels, and the whole cheese is a solid mass without holes, which in this cheese would be looked upon as a great defect. The salt is intimately mixed with the curd, and not merely rubbed on the outside. This checks internal fermentation and prevents the formation of elastic matter. The whole process of cheese-making is minutely described in the 'Agricultural Report for Cheshire.'

Gloucester and Somersetshire cheeses are similarly made—with this difference, that the curd is not so often broken, or the cheese skewered, and a portion of the cream is generally abstracted to make butter.

Stilton cheese is made by adding the cream of the preceding evening's milk to the morning's milking. The cream should be intimately incorporated with the new milk; great attention should be paid to the temperature of both, and much of the quality of the cheese depends on this part of the process. To make this cheese in perfection, as much depends on the management of the cheese after it is made as on the richness of the milk. Stilton cheese is generally preferred when a green mould appears in its texture. To accelerate this, pieces of a mouldy cheese are sometimes inserted into holes made for the purpose by the scoop called a *taster*, and wine or ale is poured over for the same purpose; but the best cheeses do not require this, and are in perfection when the inside becomes soft like butter, without any appearance of mouldiness. In making very rich cheeses the whey must be allowed to run off slowly, because, if it were forced rapidly, it might carry off a great portion of the fat of the cheese. This happens more or less in every mode of making cheese.

Cheeses are frequently coloured, a practice which probably arose from the notion of making the cheese look richer; but now it deceives no one. Yet, if some cheeses were not coloured, they would not be so marketable, owing to the association which subsists between the colour and the quality of the cheese. The substance used for colouring is most commonly arnotto, which is ground fine on a stone, and mixed with the milk at the time the rennet is put in. The juice of the orange carrot, and marygold-flowers, are also used for this purpose. This last gives a more natural tint than the arnotto, which is too red. Cheddar, Stilton, Derby, and some other cheeses, are never coloured; Cheshire slightly; but Gloucester and North Wiltshire deeply. Foreign cheeses are only coloured very slightly, if at all. Dutch cheeses are made in a very similar manner to the Gloucester cheeses, but the milk is generally curdled by means of muriatic acid. Before the curd is made up into the round shape in which it is usually sold, it is well soaked in a strong solution of common salt in water. This diffuses the salt throughout the whole mass, and effectually checks fermentation. When the cheeses are finally pressed, all the whey which may remain is washed out with the brine; salt is likewise rubbed over the outside, and they are set to dry on shelves in a cool place. The flavour of the cheese is perhaps impaired by the stoppage of the fermentation; but it never heaves, and it acquires the valuable quality of keeping well even in warm climates. The little cheeses made from cream, and folded in paper, called Neufchâtel cheeses, are imported from France as a delicacy. They can be easily imitated, being nothing more than cream thickened by heat, and pressed in a small mould. They undergo a rapid change, first becoming sour and then mellow, in which state they must be eaten.

When a cheese which has been much salted and kept very dry is washed several times in soft water, and then laid in a cloth moistened with wine or vinegar, it gradually loses its saltness, and from being hard and dry becomes soft and mellow, provided it be a rich cheese. This simple method of improving cheese is worth knowing. A dry Stilton cheese may thus be much improved.

CHEESE-RENNET, a wild flower. The *Galium verum* of botanists, which derived its popular name from having been formerly employed to curdle milk.

CHEILODA'CTYLUS, a genus of fishes of the section *Acanthopterygii* and family *Scienoïdes*. (Cuvier, *Règne Animal*, vol. ii. p. 157.)

CHEILODI'PTERUS, (Lacépède), a genus of fishes of the section *Acanthopterygii* and family *Percidæ*. Three species only are known, all foreign. (Cuvier, *Règne Animal*, vol. ii. p. 157.)

CHEIRACA'NTHUS, a genus of fossil fishes from the old red sandstone of Gamrie in Banffshire and the Orkneys. (Agassiz.)

CHEIRANTHUS. [WALL-FLOWER.]

CHEIRO'LEPIS, a genus of fossil fishes from the old red sandstone of the Orkney Islands and Morayshire. The scales are very minute. (Agassiz.)

CHEI'ROMYS, the generic title of a singular animal of the lemurine family, termed, from its plaintive voice, the *Aye-Aye* (*Ch. Madagascariensis*). This singular animal is placed by Pennant, Gmelin, Cuvier, Fleming, and Swainson, among the *Rodentia*; by Linnæus and Schreber among the Lemurs.

'M. De Blainville, in his pamphlet 'Sur quelques Anomalies de Système Dentaire,' &c., states that, notwithstanding the rodent-like character of its

teeth, the rest of its organisation, manners, and habits, prove it to be a true Lemur, having absolutely no affinity to Rodentia, in spite of all that many naturalists have imagined. After a careful examination of the specimen and skull (unique) in the Paris Museum, we fully coincide in this opinion.

The Aye-Aye (*Cheiromys Madagascariensis*).

According to Sonnerat, who kept two of these animals in captivity, the Aye-Aye is nocturnal, timid, inoffensive, and slow in its motions, in these respects resembling the Lories. During the day it conceals itself in some secluded retreat, issuing forth on the approach of darkness in quest of food. Its diet consists of buds, fruits, and insects and their larvæ. It is a native of Madagascar, but, strange to say, no additional specimens have been obtained; nor, except those procured by Sonnerat, does it appear that a single individual has been seen or captured. The specimen at Paris was presented by Sonnerat.

CHEIRO'PODA, CHEIROPEDS, a name proposed by Mr. Ogilby for all the mammiferous animals that are possessed of hands. The following is an abstract of Mr. Ogilby's arrangement of his Cheiropeds.

Class . . Mammalia.
Order . . Cheiropoda.

Mammals with opposable thumbs on the anterior extremities only . Bimana.
On both anterior and posterior extremities . . . . . Quadrumana.
And with anthropoid teeth,
Monkeys of the Old World.

Mammals with abnormal teeth,
Lemuridæ.

With opposable thumbs on the posterior extremities only . . Pedimana.
And with anthropoid teeth,
Monkeys of the New World.

Mammals with rodent teeth,
Cheiromys.

Mammals with abnormal teeth,
Didelphidæ.

(For a complete exposition of Mr. Ogilby's views, see 'Loudon's Magazine of Natural History,' vol. i., N. S. p. 449: also 'Proceeds. Zool. Soc.,' March 8, 1836, p. 25.) This system has never been adopted.

CHEIRO'PTERA, *Bats.*—Winged Mammalia. These animals form Cuvier's first family of the *Carnassiers;* but in most modern systems they constitute an order *per se.*

There is no part of the world in which these wing-handed animals do not exist, if we except the boreal regions of the north and south. It is however in the warmer latitudes that they chiefly abound, and where myriads of insects afford them sustenance. All are crepuscular or nocturnal in their habits. The distinctive characters of the Cheiroptera consist in an expanse of delicate skin, extending from the sides of the neck and body, and supported by the limbs, of which the anterior pair are very much elongated, and especially the bones of the fingers, which perform the part of stretchers, like the strips of whalebone in an umbrella. These membranous wings are capable of being neatly folded up. The thumb is short, and armed with a hooked claw, which enables the animal to drag itself along on the ground, or on the edge of a rock, or branch of a tree. The hinder toes are also armed with sharp claws, by which the animals suspend themselves while they sleep during the day. The expanse of the wings requires strong clavicles and large scapulæ, in order that the shoulder may have the requisite solidity, but is incompatible with the rotation of the fore arm. These animals have all four large canines, but the number of the incisors varies. Most are insectivorous; some however are blood-suckers, as *Desmodus, Vampyrus,* &c. Others, as the Roussettes (*Pteropus*), are fruit-eaters. In Europe, and most probably in every part of the world, the bat sleeps in a state of torpidity during the winter, numbers clustering together in some sheltered retreat, as the hollow of a tree, a cavern, &c.

In the females the teats are two, and pectoral: the young are born blind.

The genera into which the Cheiroptera are divided are very numerous. We give, as examples, figures of the *Vampire Bat,* of which so many stories have been told of its sucking the blood of persons when asleep, and of the *Kalong* of Java. Both are large. The Vampire occurs in South America.

The Vampire Bat (*Vampyrus spectrum*).

The Kalong (*Pteropus Javanicus*).

(For the characters of the various genera, see Geoffroy St. Hilaire in *Ann. du Muséum d'Hist. Nat.*, tom. xv.; Temminck's *Monographie*; Gray's 'Revision of the Genera of Bats,' in *Magazine of Zoology and Botany*, No. 12.)

CHEIROSTE'MON PLATANOI'DES, a most singular plant belonging to the natural order *Bombaceæ*, and commonly called the Hand-Tree, in consequence of its stamens being so arranged as to present an appearance somewhat similar to that of a human hand. It is a lofty tree, with the habit of a plane, and a trunk about as thick as a man's body; its head divides into a number of close horizontal branches, which are of a brownish colour towards their extremities in consequence of the number of short fawn-coloured hairs that beset them. The leaves are heart-shaped; the flowers of a bright red, and appear at the ends of the branches. The singular form of the stamens and their large size has rendered this tree an object of curiosity and veneration in Mexico from time immemorial.

All attempts to cultivate this singular plant in our own country have proved unsuccessful.

CHEIROTHE'RIUM. The foot-prints on the red sandstone of Hildburghausen were referred by Kaup to a mammiferous animal under the above title. To the same origin many similar remains in England have been referred. The animal was probably a Batrachian reptile. The footprints occur with ripple marks, and what are called rain marks, on the flaggy red sandstones of the Mersey.

CHEKE, SIR JOHN, a learned writer of the 16th century, was born at Cambridge, June 16, 1514. He was admitted into St. John's College, Cambridge, in 1531, where his early studies were chiefly directed to the Latin and Greek languages. About 1540 he became the first professor of the Greek language in the university, upon King Henry VIII.'s foundation. In 1544 Cheke was sent for to court, to be made joint-tutor for the Latin tongue with Sir Anthony Cooke to Prince Edward, and he seems also to have had the Lady Elizabeth for some time under his care. When Edward VI. came to the throne, he rewarded Cheke with an annuity of a hundred marks, and he also received some advantageous grants of monastic property. The king likewise caused him, by a mandamus, to be elected provost of King's College, Cambridge. In 1550 he was made chief gentleman of the king's privy chamber, and in 1551 received the honour of knighthood. In 1552 he became clerk of the council, and soon afterwards one of the secretaries of state, and a privy councillor. This was the height of Sir John Cheke's fortunes. His zeal for the Protestant religion caused him to take the side of Lady Jane Grey on Edward's decease, and he acted as her secretary; but on Mary's accession he was committed to the Tower, and an indictment was drawn up against him. He was kept in prison, and his property confiscated, but he received a pardon, and was liberated Sept. 3, 1553. He then travelled on the continent for some time; but early in 1566 he was seized in the Low Countries, by order of Philip II., and brought again to the Tower of London. Attempts were made, by the queen's directions, to convert him, but they were ineffectual, till the argument used by Feckenham, dean of St. Paul's, was urged, 'either comply or burn.' Cheke was subdued, and on Oct. 4, in the same year, he made a public recantation before the queen, and after that before the whole court. Remorse and vexation sate at last so heavy on Cheke's mind, that he pined away with shame and regret. He died Sep. 13, 1557, at the age of forty-three, and was buried in the north chapel of the choir of the church of St. Alban, Wood Street, London. Few of Sir John Cheke's works would suit the reading of the present day. Still he was one of the most learned men of his age, one of its greatest ornaments, and one of the revivers of polite literature in England.

CHELIDONIUM, a small papaveraceous genus, the only species of which is a glaucous rather hairy annual, with small yellow flowers, commonly called *Celandine*, which possesses no useful properties.

CHE'LIFER, a genus of *Arachnidæ*, remarkable for the resemblance which the species composing it bear to scorpions. Hence Lamarck styled the order in which he placed them 'les faux scorpions,' associating them with *Galeodes*. The mandibles of *Chelifer* are short, with didactylous extremities. The palpi are two, very long, and fine-pointed, resembling arms, and having claws at their extremities. The maxillæ are connivent, and two in number. The eyes are two in the *Chelifers* proper, as distinguished by Hermann from the species of the genus *Obisium* of Leach, which have four; they are placed at the sides of the thorax. The body is ovate, anteriorly acute, and depressed. The feet are eight.

These curious animals are very small, and resemble miniature scorpions deprived of their tails. They run fast, moving backwards, forwards, and often sideways like crabs. They live under stones, in crevices of rocks by the sea-side, under bark of trees, and in houses among old papers and old furniture. They feed upon insects. They are found in Europe.

CHELMSFORD. [Essex.]

CHE'LODUS, a genus of fossil Mammalia proposed by Kaup. It is of the rodent type, allied to the Beaver and Porcupine, and occurs in tertiary beds at Eppelsheim, near Mayence.

CHELONIA (Godart), a genus of Lepidopterous insects of the section *Nocturna* (Latreille) and family *Arctiidæ* (Leach).

The genus *Chelonia* is synonymous with *Arctia* of Shrank. The latter name is adopted by British entomologists on account of its priority. The term Chelonia is open to another objection, being commonly used to designate a section of Tortoises.

As well-known examples, we may mention the *Large Tiger Moth* (*Arctia caja*), and the Cream-Spot Tiger Moth (*Arctia villica*).

CHELONIANS. [TORTOISES.]

CHELSEA. [MIDDLESEX.]

CHELTENHAM. [GLOUCESTERSHIRE.]

CHEMILLE'. [MAINE-ET-LOIRE.]

CHEMIN DES RONDES, in Fortification is a level space from 10 to 15 feet broad, which is sometimes formed on the exterior side of the rampart of a fortress, or of an outwork, at about 8 feet above the level of the natural ground. It serves as a path for the officers superintending the troops who are on duty in the covered-way, and it may be useful as a station for the defenders when they would oppose an attempt of the enemy to place scaling-ladders against the face of the escarp-revetment; also, with such a space between the foot of the parapet and the top of that revetment, the parapet is *not* in immediate danger of falling, on the revetment below being breached. Communications to the 'chemin' are made through the rampart, and the chemin is protected on the exterior by a hedge or low wall; the latter may be pierced with loop-holes for the defence of the ditches and covered-way. A Chemin des Rondes is however liable to some objections, though great importance was attached to it by Vauban: its protecting wall is easily destroyed by the artillery of the besiegers, and the work causes the rampart to be wider than is, in some cases, convenient. Moreover, if the enemy should succeed in gaining it by an escalade, he might there form in good order, and mount the parapet in force. It must inevitably happen, also, that the missiles which the defenders might attempt to throw from the parapet upon the assailants, while in the ditch, would be retained harmless on the chemin.

The effects of an enfilade fire on the Chemin des Rondes, and the danger of being escaladed, would be diminished by forming the work at 10 or 12 feet above the ground, as proposed by Choumara.

CHEMISTRY, from χημία (*chemeia*). According to Suidas (in voc. χημεία) it was 'the making of silver and gold,' or what it is now more generally known by the name of alchemy. [ALCHEMY.] Suidas adds, that Diocletian burnt all the ancient books of the Egyptians on chemistry (as above explained), in order that the Egyptians might no longer be able to acquire wealth by the practice of this art, and thus be encouraged to resist the Romans. According to modern definition, the object of chemistry is to determine the constituents of bodies, and the laws which regulate the combinations of the elementary particles of matter.

Before the time of Constantine, the knowledge of chemical substances possessed by the ancients was limited to a small number. Acetous acid, nitre, potash, common salt, muriate of ammonia, alum, copperas, green vitriol, lime clay, sulphur, oils, gold, silver, iron, lead, copper, tin—these are nearly all the chemical substances of which distinct mention has been met with. The principles or theories were little more than a collection of unconnected and ill-formed axioms or maxims.

From the 7th to the 17th century, many important facts were discovered, and several products were added to the meagre list which has been given. Basil Valentine discovered a mode of making sulphuric acid. Raymond Lully produced nitric acid from nitre. Glauber produced muriatic acid from common salt. Aqua Regia was first prepared by Hollandus. Geber improved the modes of preparing the carbonates of potash and of soda, and borax. Glauber described the sulphates of soda and of ammonia. Lully and Valentine discovered many of the important properties of potash and ammonia. Crollius, Bartholetus, and Sylvius, added to the number of saline substances before known. Very little new information was obtained concerning the earths. Among metals, Valentine discovered antimony, Agricola bismuth, Paracelsus zinc, and Schröder arsenic. The nitrate and chloride of silver, calomel, binoxide of mercury, deutoxide of antimony, acetate of lead, tartrate of potash and of antimony, and sulphate of zinc, were discovered, and names applied to them very different from those by which they are now known. The sulphuric and nitric æthers were mentioned by Valentine, spirit of wine by Lully and others; carbonate of ammonia by Lully, and carbonic acid gas by Van Helmont.

From the middle of the 17th century to the beginning of the 18th, many learned societies were formed; such as the Academy del Cimento at Florence in 1651, the Royal Society at London in 1660, the Academy of Sciences at Paris in 1666, and the Prussian Academy in 1700. These societies greatly promoted the advancement of chemistry. Among individual researches, those of Rey on calcination, in 1630, were important. Newton, observing that sugar dissolves in water, alkalies unite with acids, and metals dissolve in acids, inquires whether these effects are not occasioned by an attraction between their particles; and he thus indistinctly broached the doctrine of chemical attraction. Boyle made many important discoveries relating to tests or reagents, combination, acids, alkalies, and combustion. Hooke took part in many of these investigations. Mayow, of Oxford, made experiments on the analogies between respiration and combustion. He also noticed many new and curious facts relating to the mutual action of salts.

The names of Beecher and Stahl are connected with important inquiries relating to combustion, and to the nature of the elementary bodies. Beecher, born at Spires in 1645, entertained an opinion that the elements of bodies are air, water, and three earths, one of which is inflammable, another mercurial, and another fusible; these three earths, combined with water, he supposed

to constitute a universal acid, which is the basis of all other acids. He entertained several other notions which are now known to be utterly at variance with the results of experiment; his greatest merit was the contrivance of a theory by which all known facts were connected, and deduced from one general principle. This theory was adopted and considerably modified by Stahl, and was by him promulgated in so imposing a form as to be received by the chemical world almost universally for nearly a century. George Ernest Stahl, born at Anspach in 1660, pursued chemical studies with great ardour; and in a work on the 'Dogmatic and Experimental Principles of Chemistry,' he promulgated what is now known as the Stahlian theory. According to this theory, all combustible bodies are compounds; all metals are impregnated with an inflammable principle, called phlogiston; and thus phlogiston is the cause of all metallisation and combustibility. Overturned as this theory has since been, the merits of Stahl as a first-rate chemist, considering the time when he lived, has been fully admitted by Davy.

Several chemists of the phlogistic school followed, who contributed to the advancement of chemical science during the 18th century. Among these were Neumann, Pott, Margraaf, Kunckel, Brandt, Lemery, Homberg, Duhamel, and Macquer. Dr. Hales greatly advanced the knowledge of pneumatic or gaseous chemistry. He subjected a vast number of bodies to the action of heat, and by this means obtained gaseous products from them: thus he found that the air which he obtained from wood was fatal to animals; from nitre he procured nearly 200 times its volume of air, and from coal one-third of its weight; he found that oil of vitriol, when poured on iron filings, produced very little air, but that the addition of water occasioned its evolution in large quantity; he also found that, when phosphorus was burnt in air, the quantity of air was diminished, and white fumes were produced. In 1718 Geoffroy published tables of affinity, which, though incorrect, were useful to later inquirers. Dr. Black, in 1756, published his researches on calcareous, magnesian, and alkaline substances. He showed that there existed in these substances an nëriform body, possessing chemical and physical properties, perfectly distinct from the air of the atmosphere; and that it was capable of being expelled from earthy and alkaline substances by the action of an acid, and when the air thus set free was collected and examined he found it to possess the properties of a weak acid. This discovery of an elastic fluid, distinct from common air, was followed by many successful researches on gases generally. Black's subsequent researches on latent heat were very important to chemical science.

About the year 1765, Mr. Cavendish discovered and described the properties of inflammable air, since called hydrogen gas; and he ascertained the relative densities of fixed air, inflammable air, and common air, the exact proportions of the constituent gases of the atmosphere, the composition of nitric acid, and the freezing point of mercury.

Dr. Priestley (born in 1733, died in 1804), was one of the greatest chemists of the 18th century. His first memoir was published in 1772, and was on the method of impregnating water with carbonic acid gas. He next minutely examined nitric oxide. Priestley, Rutherford, and Hauksbee discovered nitrogen independently of each other. Priestley's greatest discovery was that of oxygen, called by him dephlogisticated air, in 1774. He procured oxygen by strongly heating red oxide of mercury, formed by the action of heat and air upon the metal, and collecting the gas which was evolved from it. He showed the existence of sulphurous acid, fluosilicic acid, muriatic acid, and ammoniacal, nitrous oxide, carbonic oxide, and carburetted hydrogen gases. He examined the action of electricity on various compound gases, and the action of vegetation on atmospheric air. Indeed, scarcely any department of chemical research escaped his notice.

Bergman (born in 1735, died in 1784) published in 1774 a paper on the 'Aërial Acid,' now called carbonic acid gas. He afterwards made researches on oxalic acid, and on a large number of other substances. But he is chiefly noted for his 'Essay on Electric Attractions.' In this work, his intention was to point out the nature of chemical affinity, and to account for the anomalies which that complicated subject appears to present. He adopts it as a principle that chemical combination is the result of an absolute force. He published tables in fifty-nine columns, in which he showed the relative attraction of bodies, or what he terms elective affinity. These tables are constructed upon the now well-known principle, that any substance, whether acid, alkali, or metallic oxide, being placed at the head of a column, and others under it, such substance has the greatest affinity for that next to it, and for the rest, according to the nearness of their place. These tables, though not always correct, were valuable additions to the materials of the science.

Scheele (born at Stralsund in 1742, died in 1786) discovered a new mode of obtaining oxygen, called by him empyreal air. He made discoveries on the blackening effect of the sun's rays on chloride of silver, on the composition of fluor spar, on the molybdic and arsenic acids, on milk and its constituents, on the citric, tartaric, and malic acids, on æther and calomel; he discovered chlorine (called by him 'dephlogisticated muriatic acid'), barytes, and prussic acid, and formed the arsenite of copper, since known as 'Scheele's green.'

Lavoisier (born at Paris in 1743, died in 1794) contributed largely to chemical science. His 'Elémens de Chimie' were published in 1789. In this work he considers heat as a subtile fluid or a material substance, which he calls caloric. He argues that the different forms of matter depend in general upon the quantity of caloric which they contain. His researches on the properties of gases led him to propose the distinctive names of oxygen and azotic to two of the most important. Lavoisier and his coadjutors effected various improvements in chemical nomenclature, most of which remain in use at present. He investigated the nature of the diamond, and

showed that, by burning it in oxygen gas, carbonic acid was formed, and hence he argued, what is indeed now generally admitted, that the diamond, in its chemical nature, is similar to common charcoal. He conjectured, what Davy afterwards proved, that the alkaline earths are metallic oxides. Many other points connected with theoretical chemistry were investigated by him; and he obtained from Davy the character of one of the most logical and sagacious of chemical reasoners. He stands under the charge, however, of unfairness in relation to the discoveries of other chemists. A ..gthened controversy has taken place within the last three or four years, concerning the share which Lavoisier had in the discovery of the composition of water, Cavendish and Watt being the other two competitors for this honour.

Claude Louis Berthollet (born in 1748, died in 1822) was the author of more than eighty memoirs on chemical subjects. Among the most important of these are papers in which he demonstrated the nature and properties of the elements of ammonia, the bleaching properties of chlorine (called by him oxygenised muriatic acid), the nature of fulminating silver, and numerous facts relating to prussic acid and other substances. In a work called 'Chemical Statics,' he canvassed Bergman's opinions on chemical affinity; and he advanced doctrines which afterwards gave way to the atomic theory. Guyton de Morveau (born 1737, died 1816) made some important researches on the chemical means of disinfecting air, and on other points connected with practical chemistry. But he is best known for his share in the establishment of the new method of chemical nomenclature, so honourably due to the French chemists Lavoisier, Berthollet, Fourcroy, and De Morveau.

Antoine François de Fourcroy was born at Paris in 1775, and died in 1809. This chemist was more celebrated as one of the first authors, if not the earliest, of a treatise on chemistry, and as a lecturer, than as a promulgator of any very great discovery. His chemical work went through several editions, and is in general written with perspicuity and attention to the history of the science: his 'Philosophy of Chemistry' is also a work of considerable merit. Klaproth (born in 1743, died in 1817) was the first skilful analyst of precious stones: he carried the art of chemical analysis to greater perfection than it had before attained. He discovered uranium, zirconia, titanium, and cerium, and investigated the properties of many other bodies. Vauquelin was also a skilful analytical chemist, especially in mineral substances. He discovered glucina and chromium.

Mr. Smithson Tennant (born in 1761, died in 1814) confirmed Lavoisier's views of the relation between carbon, carbonic acid, and the diamond; he made valuable observations on limestones and emery; and he discovered osmium and iridium. Gahn (born in 1745, died in 1818) applied the blowpipe to the analysis of many mineral substances, especially the oxides of manganese. Gregor (born in 1762, died in 1818) discovered the oxide of titanium, and analysed many salts previously hardly known. Wollaston (born in 1767, died in 1828) was a most careful and acute chemical analyst. He made researches on urinary calculi, on oxalates of potash, on the dependence of voltaic electricity on chemical action; he constructed the scale of chemical equivalents, so important in relation to the doctrine of definite proportions; he invented the 'reflective goniometer,' for the examination of crystals; he discovered palladium and rhodium; and he perfected the methods of working in platinum.

Humphry Davy was born at Penzance, in Cornwall, in 1778, and died in 1829. The researches and discoveries of this justly celebrated man will ever rank him among the greatest chemists of the age in which he lived. He wrote essays on Light, Heat, and the Combinations of Light; on the Generation of Oxygen Gas; on the Colours of Organic Beings; on the Nitrous Oxide; on the Chemical Agencies of Electricity. By the decomposing power of voltaic electricity he separated the metallic bases of potash, soda, lime, barytes, strontia, and lithia; he discovered boron, the base of boracic acid; he demonstrated the elementary nature of chlorine; he experimented on the nature of fire-damp, and invented the safety-lamp; and he made improvements in every department of the science.

During the latter half of Davy's life chemistry received immense advancements from other quarters: from Wenzel, Higgins, Richter, Proust, Dalton, Berzelius, Gay-Lussac, Prout, Faraday, &c. Of the atomic theory, and Dalton's connection with it, an account is given elsewhere. [Atomic Theory.] In 1803 Sertuerner, by discovering the morphia contained in opium, commenced the important study of the vegetable alkalies. Courtois discovered iodine; Berzelius discovered selenium, silicon, zircon, and thorium; Stromeyer, Arfwedson, Bussy, and Sefstrom, respectively, discovered cadmium, lithium, magnesium, and vanadium. Faraday succeeded in liquifying many of the gases, and enriched chemical science with many discoveries. Balard discovered bromine.

A history of chemistry during the last twenty years would involve details more varied in their character than at any former epoch, on account of the numerous points of contact between chemical, physical, and organic science. In order to possess even a moderate knowledge of chemistry, a large number of other sciences must now be studied.

Faraday's 'Experimental Researches in Electricity,' which have reached twenty series, and have appeared in the 'Philosophical Transactions,' between 1832 and 1846, have thrown a wholly new light on many departments of chemistry. He has measured electrical power, and measured chemical power, and has shown that the latter is never manifested without the former; he has thrown greater light on the chemistry of the voltaic battery than any one who preceded him, and has enriched almost every department of chemical science. The late Professor Daniell, by his investigations into the electrolysis of chemical compounds, showed further the close connection between electricity and chemistry. He, as well

as Turner and Graham, brought out a number of important results relating to the laws and modes of combination in chemical substances.

Chemistry, considered distinct from its electrical relations, has had very important enlargements. Many new metals have been discovered by Berzelius and others; such as niobium, ilmenium, pelopium, rutherium, latanium, didymium, erbium, terbium, &c., respecting which, however, the evidence is hardly yet sufficient to warrant their introduction in regular treatises. Many important points have been determined concerning the isomorphism and isomerism of chemical substances. Playfair, Joule, Griffith, Kopp, and others, have thrown light on the atomic volume of bodies. Graham has made important researches into the nature of double salts and sub-salts, and into the mode of combination of water with salts. Dumas has brought forward an important theory of substitutions, or chemical types, illustrative of chemical combination.

The relation between chemistry and the arts has been developed in a no less remarkable degree. By the researches of Daguerre, Talbot, Herschel, Hunt, Claudet, &c., on the action of light on delicately prepared chemical surfaces, a wholly new branch of the fine arts has been developed. [PHOTOGRAPHY.] By the researches of Möser, Draper, and others, a chemical action has been found to result from invisible rays, the nature of which will form a curious branch of optical inquiry. By the investigation of a residual action (the deposition of metal from a liquid solution) of the galvanic battery, Jacobi, De la Rive, Jordan, Spencer, and others, have developed the beautiful and important arts of electrography, electro-gilding, &c. By Schönbein's discovery of the curious properties of gun-cotton, new light has been thrown on the chemical natures of explosion and explosive compounds. If the whole range of our manufactures could be examined individually, it would be found that scarcely any of them have failed to benefit by one or other of the countless chemical discoveries made within the last twenty years.

But it is, perhaps, in *organic chemistry* that the greatest progress has been made. The names of Liebig, Dumas, Mülder, Döbereiner, Berzelius, and numerous others, are connected with elaborate and important investigations into the chemistry of life, both animal and vegetable. The British Association, at one of their meetings, requested Liebig, the distinguished professor at Giessen University, to prepare a report of the progress which organic chemistry had made during the few years preceding that meeting; and the report so prepared has been the forerunner of numerous valuable treatises from himself and others. The organic bases, ethyl, methyl, formyl, and acetyl; the ammonia series of compounds; the resins and gums; the vegetable alkalies; the hydro-carbons; the constituents and products of sugar; the analysis of food, especially in respect to nitrogen; the nature of fat, muscle, and other organic principles; the theory of digestion, considered as a chemical process; the theory of fermentation and of putrefaction; the mutual bearings of animal and vegetable chemistry in relation to agriculture —all have been made the subjects of elaborate inquiry; and the atomic theory, or at least the doctrine of definite proportions, has been found as valuable in organic as in inorganic chemistry.

CHEMNITZ, a town in Saxony, the capital of the Erzgeberge-Kreis, is situated in a large well-watered plain at the foot of the Erzgeberge, in 50° 50′ N. lat., 12° 53′ E. long., and has 23,000 inhabitants. It is the principal manufacturing town in Saxony; its cotton goods, and especially its stockings, are celebrated for goodness and cheapness. There are several establishments for bleaching, dyeing, and for the manufacture of spinning machinery. The town is well built; the streets are spacious and mostly straight, and many of the houses look more like palaces than dwelling-houses. The old walls have been levelled, and their site made into walking grounds, which connect the old town with its thriving suburbs. The principal public edifices are the great church, the town-hall (Rathhaus), and cloth-hall (Gewandhaus).

CHENOPODIA'CEÆ, a natural order of exogens, consisting of numerous species, used either for culinary purposes or for the manufacture of soda. Spinach, beet, orach, and other spinaceous plants, belong to this order, in which no deleterious species has been discovered.

CHENOPO'DIUM, the genus after which the last-mentioned order has been named, consists of weedy plants, common on dunghills and in waste places, and known by the strange names of Fat-Hen, Good King Henry, &c. They are generally insipid plants, whose leaves and young shoots may be eaten as spinach, but which have no particular merit. In this genus is however found the celebrated Quinoa of Peru (*Chenopodium quinoa*). Its leaves are employed as spinach, and the seeds in soup or broth as rice, and in some parts of South America they are in as much use as rice in India. It is chiefly upon the highest land of Southern Peru, where neither barley nor rye will ripen, that quinoa forms the great article of agriculture.

CHEPSTOW. [MONMOUTHSHIRE.]

CHEQUE, an order on a banker by a person who has money in the bank, directing him to pay a certain sum of money to the bearer or to a person named in the cheque, which is signed by the drawer. Cheques are immediately payable on presentment. They must be payable on demand, and must be drawn on a banker within fifteen miles of the place where they are issued. The place of issue must therefore be named, and they must bear date on the day of issue. A cheque should be presented on the day on which it is received, or within a reasonable time. A 'crossed' cheque is an ordinary cheque with the name of a particular banker written across the face of it for security, or it may be crossed simply '& Co.'; and in this case it will only be paid through that banker. If presented by any other person, it is not paid without further inquiry. A cheque is some evidence of payment in the absence of a proper receipt.

CHER, a department in France, comprising

Haut-Berri and Bas-Bourbonnais, is bounded N. by the department of Loiret, E. by that of Nièvre, S. by that of Allier, and W. by those of Indre and Loir-et-Cher. It lies between 46° 18′ and 47° 40′ N. lat., 1° 50′ and 3° 4′ E. long. The greatest length from N. to S. is 85 miles, from E. to W. 55 miles. The area is 2783 square miles. The population in 1841 was 273,645, which gives 98.3 to the square mile, being 69.7 below the average per square mile for the whole of France.

The department consists almost entirely of a vast plain of very unequal fertility. The eastern part, which belongs to the basin of the Loire, is extremely fertile. The north has several ranges of low hills, which sweep in parallel curves from N.E to S.W.; between them there are valleys watered by rivers, which follow the direction of the hills, and here the soil is sandy, and in many parts covered with heaths and marshes. In the north-western districts the soil consists of a hungry sand which yields little else than heath and broom. In the south and south-west the land is tolerably good, but here and in the centre of the department there are a great number of ponds and marshes. The extent of natural pasturage and moor land throughout the department is very considerable.

The Cher, from which the department is named, rises E. of Aubusson, in the department of Creuse, on the borders of which, having received the Tardes from the left, it crosses the north-west of the department of Allier, and running N. separates Allier from Cher, in this part of its course taking in the waters of the Aumance from the right; turning from the boundary a few miles S. of St.-Amand, it runs N.W. through the department of Cher to the neighbourhood of Vierzon, where it receives the Arnon from the left, and the Yèvre from the right, and begins to be navigable. Below Vierzon it turns W., and enters the department of Loir-et-Cher, taking in the Sauldre a little below Selles on the right bank; hence its course is generally W. to its junction with the Loire a little below Tours, after a course of about 200 miles. The Cher is subject to floods, which sometimes rise 16 feet above the usual level of its surface, and as the grounds in the lower part of its course, along the right bank, are low, its inundations are often attended with great destruction, notwithstanding that dikes have been erected along the right bank for 17 miles from its junction with the Loire. The Loire and the Allier, both of which are navigable, form the eastern boundary.

The department is traversed by the Canal du Duc de Berri, called also Canal du Cher, which runs along the left bank of the Cher, from Montluçon in the department of Allier to St.-Amand; hence it enters the valleys of the Marmande, the Yèvre, and the Auron, passing Bourges, and joins the Cher again at Vierzon. A branch joins this canal to the lateral Canal of the Loire, which runs from Digoin to Briare, where the Canal du Loing commences, uniting the Loire and the Seine. The department is crossed by the railroad, which runs directly S. from Orléans to Vierzon, where it diverges into two lines, one running S.E. to Bourges, the other S.W. to Châteauroux, both of which are now open. The common roadway accommodation is by 8 royal and 21 departmental roads.

The whole surface of the department contains 1,781,397 acres, distributed among 83,527 proprietors, and subdivided into 784,363 parcels. Of this area 916,000 are capable of cultivation, 274,958 are natural grass-land, 31,820 are under vineyards, 291,100 under woods and forests, and 155,183 under heaths, ponds, and marshes. The common bread-stuffs are grown in sufficient quantity for the consumption. Hemp is extensively cultivated; the annual produce is 14,760 cwts. This department supplies the wine from which the best Orléans vinegar is made. The annual yield of the vineyards is only 5,500,000 gallons. Other articles of produce are fruits, flax, chestnuts, truffles, &c. Horses, goats, pigs, and sheep are numerous; the wool of the sheep is esteemed for its fineness. Game, bees, and poultry abound.

Iron and coal mines are worked; and marble, building and mill stone are extensively quarried. Manganese, lithographic stone, plaster of Paris, porcelain, and fuller's clay are found. There are 15 blast furnaces and 30 forges, in which the smelting of the ore and its conversion into malleable iron and steel is effected near the mines, chiefly by means of charcoal supplied from the neighbouring forests. The other manufactures are coarse cloth, drugget, canvass, nails, cutlery, fine porcelain, salt-petre, oak-staves, cotton and woollen yarn, &c. The commerce of the department consists of the agricultural and industrial products mentioned, and of fat cattle, goat-skins, timber, and beech-wood toys.

The department is divided into 3 arrondissements, which, with their subdivisions and population, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Bourges . . .	10	111	106,345
Sancerre . . .	8	75	71,275
St.-Amand . .	11	121	96,025
Total . . .	29	307	273,645

In the arrondissement of Bourges the chief town is Bourges. Gracey, an ill-built town on the road from Paris to Toulouse, has 3075 inhabitants; near it there is a druidical altar consisting of a large stone slab, inclining to the north, supported by three other slabs, and surrounded, except towards the south, by 21 huge stones. St.-Martin-d'Auxigny, 10 miles from Bourges, has 2318 inhabitants. Méhun-sur-Yèvre stands in a very fertile district near the Yèvre, and on the railroad from Vierzon to Bourges, and has 3333 inhabitants. The town is very ancient; near it are the ruins of the old castle in which Charles VII. lived with Agnes Sorel, and in which he subsequently starved himself to death, July 22, 1461. Ménetou-Salon has 2451 inhabitants, who are engaged in the manufacture of brandy and iron; there is an ochre mine near this town. Vierzon, 50 miles S. from Orléans, 19 N.W. from Bourges,

and 39 N.E from Châteauroux, with which towns it has communication by railway, stands at the junction of the Yèvre with the Cher, and has 5700 inhabitants. It is well and regularly built, and its site on a navigable river and canal, among vine-clad hills and vast meadows, is very delightful, and presents a most agreeable contrast with the dismal region, well named *La Triste Sologne*, which lies N. of Vierzon, and is traversed in coming here from Orléans. The houses are mostly covered in with slates. Vierzon is a place of great and increasing commercial activity. Cloth, serge, iron-ware, hosiery, porcelain, and leather are manufactured; great quantities of the best iron of Berri are manufactured at the furnaces and forges near the town. Aix-d'Angillon, 11 miles from Bourges; Baugy, in the marshy district E. of Bourges; Charost, in a rich wine district on the Arnon; and St.-Florent, near the Cher, give name to the other cantons, and have each a population under 2000.

In the arrondissement of Sancerre the chief town is Sancerre, near the left bank of the Loire, an ill-built place, but prettily situated on a hill, the sides of which are covered with vines. It is 28 miles N.E. from Bourges, and has 3483 inhabitants, a college, tribunal of first instance, manufactures of hosiery and leather, and a considerable trade in corn, cattle, wool, and marble raised from the neighbouring quarries. Aubigny, N.W. of Sancerre, is a wretched, ugly, ill-built town, with 2176 inhabitants, and a large market for wool. Henrichemont, formerly called Boisbelle, is a pretty and well-built town a few miles W. of Sancerre, with 3018 inhabitants; in the centre of the town is a spacious square in which the four main streets abut; the houses are all built of brick; the town has cloth factories, tanneries, and a large wool market. Ivoy-le-Pré, 17 miles from Sancerre, has blast furnaces, forges, and iron foundries, and 2703 inhabitants. Argent, near the northern limit of the department on the left bank of the Sauldre; Léré, near the left bank of the Loire; and Sancergues, are small places that give name to the other cantons.

In the arrondissement of St.-Amand the chief town is St.-Amand-Montrond, which has a tribunal of first instance, a college, and 7100 inhabitants. [Amand, St.] Château-Meillant, in the south of the department, has a population of 2711, and a very ancient castle. Châteauneuf-sur-Cher, on an island formed by the Cher, has 2219 inhabitants, who trade in wine, horses, and cattle; there is a wire-drawing factory and an ancient ruined castle in the town. Dun-le-Roi, N. of St.-Amand, on the right bank of the Auron, a feeder of the Yèvre, was formerly a very important town defended by walls and a strong citadel; but it seems never to have recovered its capture in the reign of Charles VII. by the English, who pillaged the town and burned the suburbs; the population is 4097; large cattle fairs are held in the town. Guerche, on the Aubois, a feeder of the Loire, has 2090 inhabitants and smelt furnaces, which produce metal of the best quality. Lignières, in the beautiful valley of the Arnon, and near the large pond or rather lake of Villiers, has 2200 inhabitants, and an old castle rich in historical associations. Sancoins, near the source of the Aubois, has 2464 inhabitants, who trade in corn, wood, cattle, plaster of Paris, lithographic stones, &c. Charenton, 7 miles from St.-Amand, on the Canal du Cher; Le-Châtelet, 12 miles W. from St.-Amand; Culan, on the left bank of the Arnon; and Nérondes, 25 miles N.E. of St.-Amand, give names to the other cantons, and have populations varying from 1500 to 2000.

The department forms, together with that of Indre, the archiepiscopal see of Bourges; it resorts to the Cour Royale and the University Academy of Bourges, is included in the 15th Military Division, of which Bourges is head-quarters, and returns 4 members to the Chamber of Deputies.

(*Dictionnaire de la France; Statistique de la France.*)

CHERBOURG, a seaport town, naval station, and fortress of the first class, is situated on the north coast of the peninsula of Cotentin, in the department of Manche, in France, at a distance of 75 miles due S. from the Needles, in the Isle of Wight, 213 W. by N. from Paris, and has 23,408 inhabitants. It stands at the mouth of the Divette, which falls into the bay lying between Cape Levi on the east, and Cape la Hague on the west. The streets are narrow and dirty; the houses are built of stone, and roofed with slates, which are got from quarries near the town. The only objects deserving of mention, besides those connected with the harbour, are the old tower, which formed part of the ancient fortifications, the church near it, and the Chapelle-de-Notre-Dame-du-Vœu, first erected by the Empress Maude, on a spot called Chantereyne, outside the town, and close to the dockyard; the public library; the collection of pictures in the town-hall; and the theatre.

The commercial port, at the mouth of the Divette, consists of an outer harbour, which communicates with the sea by a channel 656 yards long, 55 wide, and with a depth of 20 feet at low water, and of a basin, closed by floodgates, in which vessels are kept always afloat. The harbour is lined with quays; to the eastern side of the outer harbour is the old arsenal, and east of the jetty, which forms the channel, is a large bathing establishment.

The naval harbour, which is better than half a mile N.W. of the river's mouth, is cut out of the solid rock; it has a depth of 52 feet at high water, and is large enough to contain fifteen vessels of the line. To the south of the harbour are dry docks, and round these four slips for building the largest ships, two slips for frigates, forges, furnaces, workshops, a large timber-shed, and various other establishments necessary to a naval arsenal.

The triangular bay opening to the north of these harbours forms the Cherbourg roads, which are capable of holding 400 large vessels, have good holding-ground, plenty of water even at low tide, and are well sheltered, except from the north winds. To protect the roadstead from these winds, as well as to defend that part of it which is beyond the range of the guns of the forts, a breakwater (*digue*) was commenced about 2 miles north of the town, in 1784, and after many

failures, disasters, interruptions, and an enormous expense, this gigantic undertaking is now all but accomplished. It extends between Isle-Pélée on the east and Fort Querqueville on the west, for a length of 2 miles 593 yards, leaving an opening of 1093 yards at the eastern end, and of 1 mile 880 yards on the west. Its width at the base is 99 yards, on the summit 33 yards; and the depth of water about it varies from 36 to 45 feet. In the central fort of the breakwater there is a light-house 65 feet high, in 49° 40′ N. lat., 1° 37′ W. long.; there are lighthouses also on the fort in Isle-Pélée and on Fort Querqueville. All along the bay, and round the naval harbour, fortifications are built, which are said to be so strong as to render Cherbourg impregnable from the sea.

Cherbourg is a place of considerable commercial activity. The principal industrial articles are cotton-yarn, hosiery, refined sugar to the amount of 12,000 cwts. a year; soda, of which 12,000 tons are produced annually in the neighbourhood; chemical products, and leather. There are also dye-houses, large provision-stores, and a lace-factory, superintended by four nuns, which gives employment to 350 females, 150 of whom are young girls instructed in the process of lace-making. The exports consist of the articles named, and of butter, eggs, peas, vegetables, provisions, cattle, slates, &c.; the imports, of fir, hemp, and flax, for the use of the navy, groceries, wine, iron, &c. The town is an entrepôt for colonial produce and salt; several vessels belonging to the harbour are engaged in the Newfoundland fisheries.

Cherbourg is the residence of a maritime prefect; has tribunals of first instance, commerce, and naval affairs; and possesses a school of hydrography, a royal academical society, and a college.

(*Dictionnaire de la France;* Macgregor's *Statistics;* Murray's *Handbook of France.*)

CHERIMOYER, the fruit of a Peruvian downy-leaved species of Anona, the *A. cherimolia:* it is described as the fruit most esteemed by the people of the western parts of South America, and is very like the Custard Apple of the West Indies. [ANONA.]

CHERLE'RIA, a genus of plants belonging to the natural order *Caryophylleæ.* There is only one species which is a native of Great Britain, the *C. sedoides* of Linnæus.

CHEROKEES. [NORTH-AMERICAN INDIANS.]

CHERRY. [CERASUS.]

CHERSON. [KHERSON.]

CHERSONE'SUS, a Greek word signifying 'peninsula.' The term was applied more particularly to the small peninsula between the Hellespont and the Gulf of Melas, then called the Thracian Chersonesus; and to the peninsula now called the Crimea, which was called by the Greeks the Taurica Chersonesus.

CHERTSEY. [SURREY.]

CHERUBI'NI, MARIA-LUIGI-CARLO-ZENOBI-SALVADOR, was born in Florence, in 1760. He studied composition while a boy, under Felici, Bizzari, and Castrucci. At the age of thirteen he produced a mass and a motet, which excited great attention; and in the five following years he composed many works, both for the church and the theatre. Having received a pension from the Grand Duke in 1778, he studied for four years under Sarti. The years 1784-5 he spent in London; but the greater portion of the rest of his life was spent at Paris, occasional visits being made to Turin and Vienna. Soon after the restoration of the Bourbons, he became composer of the Chapelle du Roi, professor of composition at the Ecole Royale (of which in 1822 he was made director), a member of the Académie Royale des Beaux Arts, and chevalier of the Légion d'Honneur. He died in March 1842, and his obsequies were celebrated in a most solemn and distinguished manner. His own fine 'Requiem,' the last composed of his masses, was performed on the occasion.

In instrumental music Cherubini's fame has spread throughout Europe. His chief operas are, 'La Finta Principessa,' 'Giulio Sabino,' 'Ifigenia in Aulide,' 'Demophoon,' 'Lodoiska,' 'Elisa,' 'Médée,' 'Les deux Journées,' 'Anacreon,' 'L'Hôtellerie Portugaise,' 'Faniska,' and 'Ali Baba.' But it is in the field of sacred music that his genius is best shown. His masses, psalms, motets, &c., unite learned construction with original and sweet melody. His 'mass for three voices' is a masterpiece, and of itself sufficient to insure the composer great and lasting reputation.

CHERUSCI, a people of ancient Germany, who bordered on the Catti and the Chauci, living inland or south of the latter, and near the banks of the Visurgis, or Weser. The Cherusci, being excited by Arminius, joined the Catti and others in the attack and defeat of Varus and his legions. They were afterwards defeated by Germanicus. In the time of Tacitus the Cherusci had declined from their former importance, having been overpowered by the Catti and other neighbouring tribes. (Tacitus, *German.* 36.)

CHERVIL, a culinary vegetable, the *Scandix cerefolium* of botanists. It is an annual, and a native of the south of Europe; its leaves have a slight aromatic taste, and are used in soups and salads. It is little cultivated.

CHESAPEAKE BAY. [AMERICA, col. 604.]

CHESELDEN, WILLIAM, a distinguished surgeon and anatomist, was born in Leicestershire, in 1688. At fifteen he commenced his medical studies in London, under the best instructors, and began himself to give lectures in anatomy in 1711. Becoming soon favourably known, he was elected a fellow of the Royal Society in 1712, and repaid this early distinction by a variety of interesting papers in the 'Philosophical Transactions.'

In 1713 he published a work on anatomy which was long the text-book of that science in England, and was frequently republished both before and after his death. The eleventh edition was printed in 1778.

He afterwards became surgeon to St. Thomas's, St. George's, and the Westminster hospitals, where, and in his practice generally, he greatly distinguished himself as an operator; but it is in lithotomy that Cheselden has most repute as an innovator as well as an operator. In 1723 he

published a volume on this subject, and he introduced the *lateral* method, of which, as at present practised, he may almost be considered the inventor. His splendid work 'On the Bones' was published by subscription in 1733, with a dedication to Queen Caroline, to whom he held the appointment of surgeon.

In 1737, after a brilliant professional career, he retired from practice, and died at Bath, on the 10th of April, 1752, in his sixty-fourth year.

CHESHAM. [BUCKINGHAMSHIRE.]

CHESHIRE, a county palatine on the west side of England. The shape of the county has been likened to the 'wing of an eagle stretched forth at length.' Cheshire lies between 53° and 53° 34′ N. lat., and 1° 47′ and 3° 11′ W. long. Its northern boundary is chiefly formed by Lancashire, and partially by Yorkshire and the Irish Sea. The Mersey forms the boundary between Cheshire and Lancashire. On the east, the county has Derbyshire and Staffordshire; on the south, Shropshire and a small portion of Flintshire; and on the west, Denbighshire, Flintshire, and the Irish Sea. The greatest length of the county from N.E. to S.W., in a straight line, is about 58 miles; the greatest width from N. to S. about 32 miles: the whole circuit is nearly 200 miles. A long peninsula of the county is included between the æstuaries of the Mersey and the Dee. The area is about 670,000 acres. The population in 1841 was 395,660.

Surface, Hydrography, and Communications.—The surface of Cheshire is in general a nearly uniform level, but there are a few inequalities. There are several elevated tracts stretching in a general north direction. One is between the Goyt and the Bollin; a second between the Bollin and the Weaver; a third between Frodsham and Beeston Castle; and a fourth is Alderley Edge, near Macclesfield. In former times there were numerous forests in Cheshire. At present there are only a few large woods and plantations, which yield fine timber. A few heaths and peat bogs occur in the eastern half of the county.

Cheshire abounds not only with rivers and brooks, but with broad sheets of water called meres, which generally contain fish. The principal are Oak Mere, Pick Mere, Budworth Mere, Rosthern Mere, Mere Mere, Tatton Mere, Chapel mere, Moss Mere, Broad Mere, Bah Mere, and Comber Mere, which is three quarters of a mile in length.

The chief navigable rivers are the Dee, Mersey, and Weaver. The navigation of these rivers is superintended, and has been greatly improved, by companies incorporated by acts of parliament. The source of the Dee is in Merionethshire, where it forms Bala Water, and thence passes by Bala, Corwen, Llangollen, Overton, Bangor, Worthenbury, Aldford, and Chester; from whence it proceeds by a straight artificial cut to the broad æstuary of the Dee. It is navigable to Bangor by barges, and to Chester by large vessels. The Mersey is formed by the confluence of the Etherow and the Goyt, and flowing westwards receives the Thame at Stockport, and afterwards the Irwell and the Bollin; it then flows past Warrington, and expands into the wide æstuary of the Liverpool Channel. The æstuary is in one place three miles wide. The Weaver flows first southwards and then northwards, and, passing by Nantwich, receives the Dane at Northwich, and then falls into the æstuary of the Mersey at Frodsham. It has been rendered navigable by artificial means. There are a few less important rivers in the county.

Several canals intersect the county, among which are the Bridgewater Canal, the Grand Trunk, the Chester and Nantwich, the Middlewich Branch, the Birmingham and Liverpool, the Ellesmere, the Macclesfield, and the Peak Forest Canals.

Several important roads traverse this county in various directions; but they are gradually being superseded by railways, with which Cheshire will shortly be well provided. The Chester and Birkenhead, the Manchester and Cheshire Junction, the Chester and Crewe, the Chester and Holyhead, the Chester and Shrewsbury, and the Shropshire Union Railways will all intersect portions of the county. A portion of the Chester and Holyhead line will shortly (1848) be opened.

Geological character.—The general character of the Cheshire soils is a clayey or sandy loam; tracts of peat-moss cover a large extent. The range of high land to the east of Macclesfield is a sandstone rock, which contains beds of coal: this sandstone range is bounded on the east by the limestone of Derbyshire. The high land, which includes Delamere forest, is also sandstone. The most important mineral productions of Cheshire are fossil or rock-salt, and coal. The rock-salt is obtained near the banks of the Weaver and its tributary streams. It was first discovered near Northwich, in 1670, in searching for coal; it has since been found very abundantly in the townships of Witton, Wincham, Winnington, and Marston, near Northwich. There are salt-works also at Nantwich, Middlewich, and Winsford. The principal salt-works are in the neighbourhood of Northwich, where alone there are mines, in addition to brine-springs. The rock-salt is found from 28 to 48 yards beneath the surface of the earth. Coal of a good quality is found abundantly in many parts of the county. Copper, lead, freestone, and limestone are among the mineral produce.

Agriculture.—The soil and climate of Cheshire are peculiarly well adapted for the growth of grass. The soil is mostly composed of loams of various degrees of tenacity, and the climate is moister than the more eastern parts of England. Situated in an extensive plain between the Derbyshire and Welsh mountains, Cheshire is seldom exposed to long droughts. The low meadows along the banks of the rivers are very subject to be flooded, which is one reason for keeping them in grass. Two-thirds at least of the county possesses a soil above mediocrity, of which the greater part is in permanent pasture, and produces the excellent cheese known as Cheshire cheese. The arable land is generally that which is thought too sandy for pasture, or of which the grass has deteriorated by neglect. There are very few farms

which consist chiefly of arable land. There is every where a predilection for the dairy.

Dairy farms require considerable buildings, and some have been erected by wealthy proprietors in the best manner. Many of the cow-houses are constructed on the Dutch plan. The heads of the cows are turned towards each other, with a passage in the middle for a small cart, by which the fodder is brought directly before the cows. It is thus given to them with greater cleanliness and economy than in any other way. Where many cows are kept, this will be found by far the most convenient arrangement of a cow-house. There is a description of one of these cow-houses in the 'Agricultural Report of Cheshire' (p. 84), erected at Ollerton, near Knutsford, which combines simplicity with great convenience. Large farms are not common in Cheshire. The average size may be considered as from 50 to 150 acres, that quantity being sufficient for the full employment of a family, and for a dairy of twelve to twenty cows.

Grass land is considered so much more valuable than arable, that most leases contain a clause, 'that not more than one-fourth of the farm shall be ploughed.' Many farms have little or no arable land attached to them. A soil which is rather stiff is considered the best for grass, especially if there be a substratum of marl, which is the case in many parts of the county. The marl, when spread over the surface, materially improves the herbage. A very rich loam is not considered so good for pastures where cheese is made, as one less fertile, as it is apt to make the cheese heave.

The natural grasses found in the good pastures are chiefly of those kinds which have been most approved of for sowing when arable land is laid down to grass, namely *Poa pratensis, Poa trivialis, Festuca pratensis,* or, on sandy loams, *Anthoxanthum odoratum.* The Cheshire farmers often defer mowing the grass for hay in a dry summer in the hope of having a greater crop by waiting for showers; but this is a mistake, since it is much more profitable to cut the grass, however light the crop may be, as soon as the principal grasses are in flower, when the stalk contains the most nutritive juices.

Draining has been introduced extensively, and with the best effect, in order to carry off the superfluous surface-water, which is common in many parts of the county. Paring and burning are not much practised, and this mode of preparing land for crops is in general reprobated by landlords as destructive of the soil; but, when old, worn-out pastures are overrun with bad grasses and weeds, there is no improvement more effectual.

From the great number of dairy-farms in Cheshire, one would naturally expect to see considerable attention paid to the breed of cows; but, till lately, this was not the case; there were cows of all breeds, and crossed in every possible way. The great superiority of the improved short-horn breed has however made them more generally sought after. When a cow is a good milker, her cow-calves are weaned; and those heifers which are raised on the farm are thought to produce the most thriving cows. A cow is considered in her prime at four or five years old, and continues so till she is ten or twelve, after which she falls off, and should be fattened for the butcher. It is estimated that there are about 100,000 cows in the county, each of which gives on an average 2½ cwts. of cheese in the year; that is, altogether, 250,000 cwts., or 1250 tons. Each cow gives on an average about eight quarts of milk per day; some few give much more. Four quarts of milk make one pound of cheese; it takes from twelve to fifteen quarts to make a pound of butter. A cow is in full milk for six months after calving, then three months in half milk, and three months dry. A plentiful supply of good fresh food, such as clover or tares, cut and carried to the stall, will often double the average of milk; but this is seldom practised in dairy counties. The cows are generally housed in November, or kept in yards, which is better. During the winter they are let out for a few hours each day into a paddock, or small meadow, near the homestead; they find nothing to eat there, but it gives them an appetite for their dry food when they come in again. Stall-feeding of cows has been attempted, and with success.

Manufactures.—The cotton and silk manufacture is extensively carried on in and around Stockport, Macclesfield, Congleton, and Sandbach. At Nantwich and the places just named are manufactories of hats and shoes for exportation. Some woollen cloths are also made in the same districts. Tanning is very extensively carried on throughout the county. There are also manufactures of gloves, ribbons, and buttons. The copper, lead, and iron of the Alderley Edge and Peckforton Hills are manufactured in the county, and constitute a small item in the export trade. But cheese is the principal product, especially near the banks of the Weaver. Potatoes are raised in very large quantities, and are exported principally to Manchester and Liverpool.

Divisions, Towns, &c.—Cheshire is divided into 7 hundreds. It is in the diocese of Chester, and forms one archdeaconry. It is included in the South Wales and Chester circuit; but the city of Chester has separate jurisdiction, and offences are tried under its own recorder. For parliamentary purposes the county is formed into a north division and south division, each of which returns two members to parliament; in addition to which 2 members are returned for the city of Chester, 2 for the borough of Macclesfield, and 2 for the borough of Stockport.

The following are the principal towns, with the population of each in 1841:—

Altringham, or Altrincham, is situated about 9 miles W.S.W. from Stockport. It is a neat and clean town, with some manufactures of cotton and worsted. Population, 3399.

BIRKENHEAD.

CHESTER.

Congleton is a municipal borough, situated on the south bank of the river Dane, near the borders of Staffordshire, 28 miles E. from Chester in a straight line. It is an ancient town, with many old half-timber houses. It has large manufactures of silk, and there are also some tanneries and manufactures of leather. Congleton is a

chapelry, subordinate to the rectory of Astbury. There are several Dissenters' chapels. The guild-hall is a commodious brick building, with a piazza. There is a large free grammar school, numerous other schools, and several endowed charities. The borough is divided into 3 wards, and is governed by 6 aldermen and 18 councillors. The Macclesfield Canal passes by the town. Population 9222.

Frodsham is situated near the entrance of the Weaver into the æstuary of the Mersey. Salt-works and some manufactures of cotton supply the chief employments of the inhabitants. Population, 1806.

Knutsford is 12 miles W.N.W. from Macclesfield. The name is said to be derived from Canute (Knut), the Dane, who passed with his army over the small branch of the Bollin which runs past the town. The town is divided into Higher Knutsford and Lower Knutsford by a branch of the river Bollin, which rises about half a mile to the south, and, passing the turnpike road, falls into Tatton Mere. There is a spacious county prison, and a handsome town-hall. Thread, worsted, and leather are the principal manufactures. Population, 3410.

MACCLESFIELD.

Malpas is situated on an elevation not far from the eastern bank of the river Dee. The church is built of unhewn stone, and consists of a nave and chancel; it is highly ornamented, and some of its decorations are supposed to be of Saxon origin. Population, 1022.

Middlewich is situated near the confluence of the rivers Dane and Croke. Great quantities of salt are manufactured from the salt-springs here; cotton fabrics are also made. The Grand Trunk Canal runs through the town on its course to the Mersey. The church is large; the Dissenters have three meeting houses; and there is a free school. Population, 1242.

Nantwich is situated on the eastern bank of the river Weaver, in a flat district. It is a very ancient place, with many old half-timber houses. The church is large, and of various styles of architecture, with nave, choir, transepts, and small octagon tower. There is a market-house and a town-hall. The prosperity of the town was formerly owing to the brine-springs and salt-works, but only one spring is now worked. There are manufactures of cotton-goods, shoes, and gloves. The Birmingham and Liverpool Junction Canal passes by close to the town, and it is only a short distance from the London and North-Western Railway. Population, 5489.

Northwich, 17 miles E.N.E. from Chester, is situated on the Weaver, which runs through the town. Salt is the principal manufacture. Vessels of small burthen are built in the ship-yards. There is a spacious church with a semicircular choir. There are extensive salt-works on both sides of the river. The Grand Trunk Canal passes close by the town, and the London and North-Western Railway is only a short distance from it. Population, 1368.

Over is situated on the Weaver, about 5 miles W. from Middlewich. Population, 2816.

Runcorn is situated on the eastern bank of the Mersey, seven or eight miles below Warrington, and at the point where the Duke of Bridgewater's Canal and the Grand Trunk Canal communicate with the Mersey. Large quantities of freestone are shipped from quarries in the neighbourhood. The church is very ancient. Runcorn is resorted to as a bathing-place. Population, 6951.

Sandbach occupies a pleasant eminence near the river Wheelock, and commands several extensive and picturesque views. There are silk manufactures in the town, and some brine-springs in the vicinity. Population, 4587.

STOCKPORT.

Tarporley is 10 miles E.S.E. from Chester. It is pleasantly situated, cleanly, and neatly built. The church is an ancient structure of red sandstone, and contains several monuments, with inscriptions interesting to the antiquary, and some armorial bearings in windows of coloured glass. Population, 1114.

Civil History and Antiquities.—At the time of the Roman invasion this county formed part of the territory occupied by the Cornavii or Carnabii. Under the Romans it formed part of Britannia Superior, and afterwards part of Flavia Cæsariensis. After the departure of the Romans, Cheshire was held by the Britains till 828, excepting for a small period in the seventh century. It was in the hands of the Anglo-Saxons from 828 till the Norman period. William the Conqueror made Cheshire a county palatine, and granted it to Hugh d'Avranches, commonly called Hugh Lupus. From that period till the 15th century, Chester was the seat of Lupus and his successors, and the frequent scene of warlike preparations, as the county formed a sort of border county between England and Wales. It was governed almost independently of the English crown till the time of Henry VIII., as a county palatine; but that king brought it more effectually under the English crown. As the inhabitants of Cheshire were almost equally divided in opinion during the troubles of Charles I., the county suffered much during the Civil War.

The Roman roads in the county comprise the Watling Street, which was probably formed on an earlier British road; the road from Manchester to Kinderton; and part of the Via Devana. Chester was a Roman station. The ancient castle at Chester is now converted into county buildings. There are few remains of other castles in the county, except Beeston Castle which appears to have been exceedingly strong. There are many remains of ancient mansions, some of which are fine specimens of early domestic architecture. Cheshire is, indeed, the native county of a large number of wealthy families, who have occupied the old baronial residences for many ages.

CHESNE, ANDRE' DU, born in 1584, in the province of Touraine, became distinguished for his historical and philological erudition. The work for which he is best known is his valuable collection of the oldest French chroniclers, 'Historiæ Francorum Scriptores Coætanei, ab Gentis Origine usque ad Philippi IV. Tempora,' of which he edited 4 vols. fol. and his son, François Du Chesne, edited the 5th after his father's death. He also

published: 'Histoire des Rois, Ducs, et Comtes de Bourgogne et d'Arles,' 2 vols. 4to.; 'Bibliothèque des Auteurs qui ont écrit l'Histoire et Topographie de la France;' 'Histoire des Papes,' 2 vols. fol.; and some others. Du Chesne died in 1640. He has been called the father of French history.

CHESS is a game played by two persons on a chequered table of sixty-four squares, with two sets of pieces of various denominations and powers, sixteen pieces in each set. The object of the game is to force the principal piece (in England called the king) of the adverse party into such a situation that he can neither move nor remain without the danger of being taken by some other piece; for the law of the game does not allow of his being actually captured, but only threatened, and he must then remove, if possible, out of danger, or, if he cannot, the game is lost. This game is also, but more rarely, played by four persons on an enlarged table. Chess, on account of the interest derived from the infinite variety of its combinations, and from success depending entirely upon skill wholly independent of chance, has become a favourite game among educated persons of all nations. The facilities now existing for acquiring a practical knowledge of the game relieve us from the necessity of describing its moves and rules: and, for the study of the game, it has a literature of its own, too extensive for us to give even a selection from. The following are a few of the principal authors: Salvio, Philidor, Sarratt, Lewis, Walker, and Staunton.

The game of chess is of great antiquity, and appears to have been invented in China or Hindustan. Sir William Jones inclines to the latter supposition. In the second volume of the 'Asiatic Researches,' he says, 'We may be satisfied with the testimony of the Persians, who, though as much inclined as other nations to appropriate the ingenious inventions of a foreign people, unanimously agree that the game was imported from the west of India in the sixth century of our æra. It seems to have been immemorially known in Hindustan by the name of *Chaturanga*, i. e., the four *angas*, or members of an army; which are these, elephants, horses, chariots, and foot soldiers; and in this sense the word is frequently used by epic poets in their descriptions of real armies.'

Chess was not known to the Greeks or Romans; indeed, it is commonly supposed not to have been introduced into Europe till the time of the Crusaders, since which, however, it has existed in Europe, and has been constantly becoming more and more popular.

CHESTER, an ancient city in Cheshire, is situated on the northern bank of the river Dee, about 6 miles from where it falls into an æstuary of the Irish Channel. Chester is a county of itself, and has separate jurisdiction under its own recorder.

Chester was undoubtedly a Roman station, if it was not of Roman origin. Numerous Roman antiquities have been discovered. In the 'Saxon Chronicle' it is stated that Ethelfrid, king of Northumbria, took it from the Britons in A.D. 607. After that date it was in the hands of the Britons. In 830 it fell under the power of Egbert. At the Conquest Cheshire was given (with the exception only of what belonged to the bishop) to Hugh d'Avranches, commonly called Hugh Lupus, or Hugh Wolf, who had for his favourite device the Wolf's Head. Hugh was a near relation of the Conqueror, and possessed this portion of the conquered country with the Saxon title of Earl. Cheshire became a County Palatine, having courts peculiar to itself. Hugh resided in the castle at Chester, and there he held his courts, in which sat the superiors of the religious houses of the county, together with the eight great subinfeudatories among whom he distributed the greater portion of his territory. The succeeding earls of his family, of whom there were six, maintained the same state. The series terminated in the reign of Henry III., and from that time the earldom of Chester has been in the crown or in the hands of members of the royal house.

From the period of the Conquest to the Reformation, Chester received a series of charters, by which valuable privileges were granted or confirmed. Chester was in those times a place of considerable trade. The monastery of Saint Werburgh had a nunnery within its walls; the black, the white, and the gray friars had each an establishment in Chester: there was a college of the Holy Cross, and hospitals of Saint Anne and of Saint John the Baptist, of which the latter escaped suppression at the Reformation, and still continues. In the reign of Henry VIII., the monastery of Saint Werburgh was dissolved, and its church became the cathedral of the new bishopric of Chester. The diocese assigned to the new bishop was the whole county of Chester, which had previously been under the superintendence of the Bishop of Lichfield, and the county of Lancaster, with the archdeaconry of Richmond, part of the ancient diocese of York.

Chester is one of the very few places in England which have maintained in a tolerable state of completeness the walls which were erected for their defence in remote ages. They now afford an agreeable promenade, with pleasant views of the surrounding country; they are nearly two miles in circuit. The walls and the rows are two very striking objects in Chester to a stranger. The rows are a species of wide foot-path, raised above the level of the street, at the height of the first story of a house, and covered over head by the third story of the house: it is in fact as if the front rooms of the first floors in a series of houses were thrown open, or rather taken away, in order to form the row. The two great intersecting streets are, for the most part, constructed on this plan. Pennant supposes that this mode of construction may have existed from the Roman times.

The most important of the public buildings of Chester are—the castle, which is a modern structure on the site of the old castle, with a grand entrance, on the model of the Acropolis at Athens, and containing a semicircular shire-hall, where the courts are held, 80 feet by 50, and 45 feet high, and supported by 12 Ionic columns; the commercial hall; the infirmary; the theatre; the assembly-rooms; the cathedral, an

irregular structure of red freestone, chiefly built in the reigns of Henry VI., VII., and VIII., with a handsome western front, and a tower 127 feet high; the ancient chapter-house, a noble hall of large dimensions, much admired for its architecture; several parish churches; and places of worship for all the chief classes of Dissenters. The grammar-school of Chester, called the King's School (founded in 1544), which is attached to the cathedral, is under the direction of the dean and chapter: there is also the Marquis of Westminster's school; a diocesan school, and three infant schools; a blue-coat school; a charity-school for girls; a house of industry and a school of industry, and numerous Sunday-schools.

The modern history of the trade of Chester is rather the history of its decay, to which the prosperity of the port of Liverpool has in some degree contributed; but this decline is partly owing to the bad navigation of the Dee. There are no manufactures of importance. A modern stone bridge, consisting of a single arch of 200 feet span, crosses the Dee. The Chester Canal communicates with the Birmingham and Liverpool Junction Canal. The Chester and Crewe Railway is united with the London and North-Western Railway. The Chester and Shrewsbury Railway has been opened to Ruabon (Feb. 1848). A railway is open from Chester to Birkenhead; and the Chester and Holyhead Railway is in progress.

Chester has a considerable trade by means of its port, with places on the western coast of England and Wales, as well as with Ireland. The number of registered ships, Jan. 1, 1847, was 117 (11,805 tons).

The municipal borough of Chester is divided into 5 wards, with 10 aldermen and 30 councillors. The population in 1841 was 23,115. The population of the parliamentary borough, which returns two members to the House of Commons, was 22,961.

(Lysons, *Magna Britannia; Chester Guide; Parliamentary Returns.*)

CHESTER-LE-STREET. [DURHAM.]

CHESTERFIELD. [DERBYSHIRE.]

CHESTERFIELD, PHILIP DORMER STANHOPE, fourth EARL OF, was born in London, Sept. 22, 1694. At the age of 18 he was sent to Trinity College, Cambridge, where he studied the Greek and Roman writers with unusual diligence, and in 1714 he left the University to make the usual grand tour of Europe. His intercourse in the fashionable world at the Hague, Paris, and at Venice, gave him the polish of manners for which he was ever after remarkable, and upon which he prided himself. On the accession of George I., in 1715, he returned home; was made a gentleman of the bed-chamber to the Prince of Wales, afterwards George II.; and was returned to the House of Commons, for St. Germain's in Cornwall. Though he afterwards became an accomplished orator, his first effort was a failure. In the quarrel which broke out between George I. and his heir, he adhered firmly to the Prince of Wales. While in the House of Commons, he voted in favour of the Septennial Act, and against the repeal of the Schism Bills.

In 1726 he was removed by the death of his father to the House of Lords, where he became a very effective debater. On the accession of George II., whom, as prince, he had steadily served for thirteen years, Chesterfield expected a rich harvest of honours and places; but he was disappointed. He was however sent on an embassy to Holland in 1728, and was made high-steward of the household in 1732. His opposition to Sir Robert Walpole occasioned him to be deprived of his office, and he remained in opposition for many years; but for a short time he held a seat in the cabinet of the 'broad-bottomed' ministry. At the beginning of 1745 he was again despatched as ambassador to Holland. In the course of the same year he was named, while in Holland, Lord Lieutenant of Ireland, and immediately repaired to his post, where he distinguished himself, in a season of very great turbulence, by his tolerant spirit, and by conciliating and popular manners. His short government in Ireland was perhaps the most valuable part of his public life. In April 1746, he was recalled from Dublin, and appointed Secretary of State, which office he resigned, on account of declining health, Jan. 1748. In 1751 he delivered an elegant speech in favour of adopting the New Style. In his late years he became very deaf, and his health was not good, but he lived till March 24, 1773.

Chesterfield always had a taste for literature, and a partiality for the society of literary men. He patronised Hammond, a poet of third-rate merit, and would have patronised Dr. Johnson—after, as the Dr. told him, he had been successful, and did not need his patronage. His 'Letters to his Son,' which appeared the year after his death, have been much censured for the loose morality which they are supposed to inculcate; but it must be admitted that they show knowledge of the world, and much practical good sense, expressed in an easy, agreeable, and correct style. His miscellaneous works, none of which are of any great value, were collected and published in 2 vols. 4to., by his friend Dr. Maty, with a biography, in 1777.

CHESTNUT. [ÆSCULUS; CASTANEA.]

CHETTLE, HENRY. We read the names of forty plays attributed to him in whole or in part, the dates of which extend from 1597 to 1602. He appears to have been originally a dramatic compositor. Four only of his plays have been printed, of which an account is given in Collier's 'History of Dramatic Poetry;' and the same editor has inserted, in his 'Supplementary Volume' to Dodsley's Collection, 'The Death of Robert, Earl of Huntingdon,' written by Chettle and Anthony Munday.

CHEVAL DE FRIZE, a square or octagonal beam of wood, from 6 to 9 feet in length, and pierced by iron rods or wooden pickets 6 feet long, which are pointed at each end and shod with iron; the pickets are placed 6 inches asunder, and pass through two opposite faces of the beam in directions alternately at right angles to each other, the cheval resting on the ground at the lower extremities of the pickets. A series of these, disposed in lines and connected together by

chains, is placed in the ditch, on the berme, at the entrances or behind the glacis of a field fort, or on the breach made in the rampart of a fortress, in order to impede the enemy at the time of making an attack.

When Badajos was besieged in 1812, chevaux de frize, formed by fixing sword blades in beams of wood, were planted by the defenders on the breaches in the Trinidad bastion and in the adjoining curtain, where they proved a fatal obstacle to the troops engaged in the memorable assault on that fortress.

CHEVIOT-HILLS. [NORTHUMBERLAND.]

CHEYNE, GEORGE, was born in Scotland, in the year 1670. He was at first intended for the church, but, after attending the lectures of Dr. Archibald Pitcairn, he determined to practise medicine. Having taken his doctor's degree, he came to London about 1700, and soon after published his 'Theory of Fevers,' in which he attempts to explain the doctrine of secretion on mechanical principles. His next work, 'On Fluxions,' was published in 1705, and procured his admission into the Royal Society.

Cheyne's natural disposition to corpulency was so increased by full living in London, that in a few years he became 'fat, short-breathed, lethargic, and listless.' His health gradually sank, and, after trying a variety of treatment with little benefit, he confined himself to milk, with 'seeds, bread, mealy roots, and fruit.' The experiment succeeded, and he was soon relieved of his most distressing symptoms. During his illness, his mind took a different direction, and he sought in religion those consolations which he had not found in his former habits and pursuits. For many years he continued a very abstemious and careful diet, and produced some works on medical subjects which attracted attention. He resided at Bath during summer, and died there in 1742, at the age of seventy-two.

CHIANA, VAL DI. [AREZZO; ARNO.]

CHIAROSCU'RO is a branch of painting, the object of which is to combine and arrange the light and dark parts of a picture to the best advantage. The term is derived from two Italian words, *chiaro*, light, and *oscuro*, dark, and includes the treatment of bright and dark colours, or tints, as well as simple light and shade.

CHIAVARI. [GENOA, Province.]

CHIAVENNA. [VALTELLINA.]

CHICHESTER, an ancient city, the chief seat of a bishopric, a parliamentary borough and municipal borough, 56 miles S.W. by S. from London, and about 6 miles from the sea-coast. The London, Brighton, and South-Coast Railway extends through Chichester to Portsmouth. The city stands on a slightly rising ground, sloping in all directions, in a low country, which is part of the plain that extends from the west side of Brighton to Portsmouth Harbour, between the South Downs and the sea, and attains at Chichester its greatest width. The city within the walls, which are well preserved, and serve as a promenade, is divided by two principal streets running north and south, and east and west, which intersect each other near the centre of the town. Beyond the walls the suburbs are prolonged in the direction of the principal streets. A small rivulet called the Lavant, which is generally dry in summer, bounds the city on the east and south sides. The population of the city in 1841 was 8,512; that of the parliamentary borough, which returns two members to the House of Commons, was 8,084. There are no manufactures worth notice in Chichester. The cattle market, which is held every alternate Wednesday, is one of the largest in England held within the precincts of any town, and is always well supplied with cattle, horses, sheep, and pigs. Large quantities of corn are exported through the town for London and the west of England.

Chichester was undoubtedly a Roman station, probably Regnum. The walls, which are nearly a mile and a half in circuit, were in all probability erected originally by the Romans. At the end of the principal streets there were formerly fortified gates. The present walls are supposed to have been reconstructed with the materials of the Roman walls, and a mound of earth, now planted in different parts with fine elm-trees, runs round the inside of the walls.

The etymology of the name is uncertain as far as regards the *Chi; chester* means, as is well known, a fortified place. Chichester is included in the list of towns of the Staple in the 27th Edward III. Under the Municipal Corporations Act, the city is divided into 2 wards, with 6 aldermen and 18 councillors. It has returned two members to Parliament from an early date.

A cathedral, built mostly of wood, was founded here in 1108. The present cathedral, which was erected during the 13th century, exhibits some specimens of Norman design, and also some examples of the first pointed style. As a cathedral-church it is of an inferior class; but the spire, which is about a century later in date than the body of the building, is finely proportioned. Its extreme length from east to west is 407 feet; the transept is 129 feet long; the nave and aisles are 97 feet wide; and the tower and spire 300 feet high. The north transept is now used as a parish church. In the interior there are nine monuments by Flaxman, one of them to the memory of William Collins, the poet, who was a native of Chichester. It also contains several ancient monuments, which are curious. At a short distance from the north-west angle of the cathedral is an insulated bell-tower of very massive construction. The palace of the Bishop of Chichester, whose diocese comprehends nearly the entire county of Sussex, is within the city.

The parochial churches in Chichester are remarkable for their smallness and the poverty of their appearance. During the year 1836, the largest parish (the Subdeanery) was divided, and a handsome Gothic church named St. Paul's, and capable of containing a thousand persons, was erected without the walls. There are several places of public worship belonging to different classes of Dissenters.

Chichester has a clean and comfortable appearance, and is well lighted, watered, and drained. The chief public buildings are—the guild-hall,

town or county-hall, council-chamber, market-house, corn-exchange, an elegant modern building, market-cross, an enriched and beautiful specimen of that class of structures, gaol, theatre, infirmary, and the philosophical society's and mechanics' institutions. There are two or three endowed schools, and several others.

In 1817 an Act was passed for making a canal from Chichester Harbour to the city, a distance of about a mile and a half, which forms a branch of the Portsmouth and London Canal, by the way of Arundel. There is a quay at the harbour, to which vessels of 150 to 180 tons can come up at high tides. The number of registered vessels, Jan. 1, 1847, was 47 (1787 tons).

There are annual horse races in the neighbourhood, at Goodwood Park, the seat of the Duke of Richmond, which attract numerous visitors.

(Hay's *History of Chichester; Communication from Chichester; Parliamentary Returns.*)

CHICK PEA. [CICER.]

CHICKASAWS. [NORTH-AMERICAN INDIANS.]

CHICKWEED, a common annual, named by botanists *Stellaria media.*

CHICORY is a perennial plant bearing a composite flower, which gives the name to the subfamily or section of the *Chicoraceæ*, which belongs to the family *Compositæ*. It has a fusiform root like a carrot, from the crown of which large and succulent leaves spread out, with deeply indented edges. The whole plant is bitter and aromatic; and the leaves, as well as the root, have been used in medicine, in the form of a decoction, as a tonic bitter and diuretic. It is frequently used as a salad, especially when blanched. For this purpose, the roots are taken up in the end of autumn; they are then placed in sand or light mould, in a cellar from which the light is excluded, the leaves having been cut off previously within half an inch of the crown. Fresh slender leaves soon grow out of the root, and, being deprived of light, they are much more delicate and tender than those which grow in the open ground. The bitterness also is thus lessened, and they form a very pleasant winter salad. It is pleasanter to the taste than common endive, and stimulates the stomach by its bitter and aromatic quality.

The luxuriant growth of the leaves of the chicory, and their speedy reproduction after they have been cut, suggested the more extensive cultivation of this plant as food for cattle and sheep. But, notwithstanding its abundant produce, it has not been found so much superior to other green food as to make its cultivation general.

Chicory is now chiefly cultivated in Belgium and Germany, for the purpose of preparing from the root a powder which can be substituted for coffee. To have the roots in perfection, the seed should be sown, or rather drilled, in April, like that of the carrot. The land should be rich, deep, and light. The plants should be thinned out to six inches in the rows, and most carefully weeded. In September the leaves should be finally gathered and the roots taken up, which may be done with a common potato-fork. They are then cleaned by scraping and washing, split where they are thickest, and cut across in pieces about two or three inches long. These pieces are dried by means of a slow oven or a kiln. In this state it is sold to the merchants, packed in bags. It is afterwards cut or chopped into small pieces, and roasted exactly as coffee, ground in a mill, and packed in papers in pounds and half pounds for retail sale. When coffee, as well as all colonial produce, became too dear for the labouring classes in France and Germany, chicory was almost universally used as the best substitute. Chicory is said to exhaust the soil, and to require fresh ground to prevent its degenerating. Unless the soil is rich and light, the roots will not come to a good size in one season. It is only the young roots that are fit to be prepared for commerce. They lose a great portion of their weight in drying.

CHIEF JUSTICE. [COURTS.]

CHILBLAIN, a local but peculiar inflammation of the skin, commonly appearing under one of three forms. The mildest form is attended with redness, swelling, and a sense of heat and itching, often quite intolerable. In the second or severer form the colour of the swollen part is of a deeper red, sometimes of a dark blue colour, and at other times even of a purple hue. In the third or the severest form, small vesicles rise on the surface of the reddened and swollen skin, which are soon converted into sores, from which a thin irritating matter discharges, the irritating nature of which it is very difficult to alter, or to bring the sores into a state of healthy suppuration.

The exciting cause of chilblain is always cold, and more especially cold applied after the part has been previously much heated.

The painful itching, which is perhaps the most troublesome part of this complaint, is best relieved by active and long-continued friction with camphorated spirits of wine, or with a mixture of two parts of camphorated spirits with one of Goulard's extract. But one of the best modes of curing chilblains of the milder kind is to rub them with snow or ice-cold water, or to bathe them in ice-water several times a day, keeping them immersed each time until the pain and itching abate.

CHILD, SIR JOSIAH, Bart., an eminent London merchant in the latter part of the 17th century, and one of the ablest of our earlier English writers on commerce and political economy, was born of a good family in Worcestershire in 1630; he was created a baronet in 1678, and died in 1699. His principal publication entitled 'Brief Observations concerning Trade and the Interest of Money, by J. C.,' 4to, London, 1668. Notwithstanding some fundamental defects, the work contains much that is sound and valuable; and some of the principles which are laid down in it are both in advance of the current opinions of the day, and pithily and happily expressed. A second edition, much enlarged, appeared in 1690, under the title of 'A New Discourse of Trade;' a third in 1698; and the work has since been twice reprinted, the last time in 12mo., at Glasgow, in 1751. Child, who was one of the directors, and for some time chairman, of the East India Company, and who took a leading part in the conduct of its proceedings, is stated to

have written several tracts in defence of the trade to the East Indies; but they appear to have been all anonymous, and the only one which has usually been distinctly assigned to him is that entitled 'A Treatise wherein it is demonstrated that the East India Trade is the most national of all Foreign Trades,' by Φιλοπατρις, 4to., Lond. 1681.

CHILD-KILLING. [INFANTICIDE.]

CHILDRENITE occurs crystallised. Colour yellow or brownish yellow. Hardness 4.5 to 5.0. Transparent, translucent. Found near Tavistock, Devonshire, and at Crinnis, Cornwall. Wollaston has shown it to be composed of phosphoric acid, alumina, and iron, but the proportions have not been determined.

CHILE, one of the new republics on the continent of South America, lies along the shores of the Pacific between 25° and 42° S. lat. It is bounded E. by the Andes, N. by Bolivia, W. by the Pacific, and S. by the Bay of Ancud. Its length is about 1175 miles, and breadth from 100 to 200.

The Andes form a single range eastward of Chile, except at two points, where they are double, and inclose the two elevated valleys of Tunyan and Uspallata. Some of the Chilian peaks reach a height of 15,000 feet, and a few among them are volcanic. There are several passes across the range, of which the most frequented are those of Aconcagua (12,454 feet high), Portillo (14,365 feet), and Tunyan (13,210 feet).

North of the Rio Chuapa, Chile is very little else than the western declivity of the Andes, as the land slopes nearly all the way from the mountain to the ocean. There is a narrow belt of plain, sixty or eighty feet high, next the sea; but between this plain and the Andes the country is very irregular, and composed either of rocks or sand, very unfavourable to vegetation. The only cultivated spots are near the rivers Copiapò, Guasco, and Chuapa.

South of the Rio Chuapa, the country is more diversified. Two offsets of the Andes inclose between them a valley watered by the Rio de Aconcagua, fertile and populous. Southward of this valley is the plain of Santiago, which extends to the Rio Maypù; this plain has a stony and dry soil difficult to bring into culture. Between the plain and the Andes on one side, and the plain and the Pacific on the other, are hilly and sterile tracts. The Maypù, a river about 160 miles long, separates this plain from a portion of country formed principally by undulating hills, and having a soil too dry for ready cultivation. The Rio Maule then intervenes; it is a river favourable for commercial navigation; and its banks have a fertile soil. From the point where this river falls into the sea (about 35° S. lat.) to the mouth of the Rio Biobio (about 37°), the land is more level than in any other part of Chile, and is tolerably fertile. South of the Rio Biobio, although the country nominally belongs to Chile, it really belongs to the ARAUCANIANS.

The climate of the central portion of Chile, of which alone we have more particular information, may be compared in some degree with that of Italy. The greatest heat occurs in the months of January and February. In the interior, even in the elevated valley of Aconcagua, the thermometer frequently rises to 90° and 95° in the shade. The months of March and April are much more temperate, especially in the interior, and at the end of the latter month the rains generally set in. Rains fall only between May and August, and then the Andes are covered with snow, which generally lies for four or five months on the higher parts of the range. After the rainy season, in September, the spring begins, which is frequently more chilly than the winter itself, and ice is sometimes observed even on the coast. Summer begins towards the commencement of November, and then the sky, which, during the spring, is covered with clouds, is entirely free from them. Chile is subject to strong gales, which, blowing at particular seasons in certain directions, render the harbours often dangerous. Earthquakes are particularly frequent, especially along the coast. In 1819 and 1822 some of the towns were almost destroyed by earthquakes. Chile is however a particularly healthy country.

Intertropical plants do not succeed in Chile; for, though the heat in the northern district is great, the extreme dryness of the air is unfavourable to the growth of plants which require a long time for coming to maturity. The sugar-cane was tried some years ago, but it has been abandoned. Agriculture is limited to the productions of Europe. Indian corn, wheat, barley, oats, beans, hemp are largely grown, as are potatoes and capsicums. Among the fruits cultivated, the chief are melons, pumpkins, figs, grapes, pomegranates, oranges, peaches, olives, apples, and pears. Melons and pumpkins are grown in large quantities. The southern provinces contain forests of fine timber-trees.

Cattle are very abundant north of the Rio Maule, the declivities of the mountains and high hills affording copious pasture for four or five months, and some low tracts, which are sown with lucern, for the remainder of the year. Single proprietors sometimes possess from 10,000 to 20,000 head of cattle. Live stock, jerked beef, tallow, and hides are large articles of export. Cheese is made on the banks of the Rio Maule, and sent to Peru; and butter is made in the neighbourhood of the larger towns. Horses and goats are few; swine are numerous.

Gold dust is found in the sand of nearly all the rivers which come down from the Andes, as in the Rio de Aconcagua, Rio Maule and Biobio. Silver is still more abundant, but the ore is not very rich. In 1832 however very rich silver mines were discovered about sixty miles south of the town of Copiapò. The copper mines are very numerous, especially in the northern districts. Ores of lead, tin, and iron, are said to exist, but they are not worked. There are considerable stores of coal, but it is of bad quality. A little salt is met with, but not sufficient for the demand.

The population of Chile, north of the Rio Biobio, is almost entirely composed of descendants of Europeans. Their number has been

variously estimated. Mr. Macgregor thinks they may at present amount to 1,300,000. The native tribes, south of the Biobio, are described elsewhere. [ARAUCANIANS.]

Chile is politically divided into eight provinces, whose names and chief towns are thus given by Mr. Macgregor ('Commercial Statistics,' 1847): 1, *Coquimbo:* chief towns, Coquimbo, 8000 inhabitants; Copiapò, 3000; Ballenar, 7000; Illapel, 1500. 2, *Aconcagua:* Quillota, 8000; Felipe, 5000; Santa Rosa, 6000. 3, *Santiago* contains the two chief towns of Chile, SANTIAGO and VALPARAISO. 4, *Colchagua*, contains the towns of San Fernando and Talca. 5, *Maule* contains the small town of Villa de Cauquenes. 6, *Concepcion*, besides the capital of the province [CONCEPCION], which was nearly destroyed by an earthquake in 1835, contains the town of Chillan. 7, *Valdivia*, being mostly in the hands of the Indians, has no large towns; the capital, Valdivia, has only 2000 inhabitants. 8, Chiloé, an island, described under CHILOE'.

Chile is probably the only American state formerly subjected to Spain whose commerce has increased since the separation from the mother-country. In 1842, 339,019 tons of shipping entered the Chilean ports, and 328,288 tons departed. The customs and revenue for the year amounted to 1,936,323 piastres. On the 31st of May, 1842, there was merchandise at the Valparaiso Custom-house valued at more than 10,000,000 piastres. The British shipments to Valparaiso, in 1840, amounted in value to 1,202,523*l*., 652 vessels arrived at Valparaiso in 1845, and 621 departed. The United States, in 1844, exported to the value of 1,105,221 dollars to Chile, and imported from thence goods valued at 750,379 dollars. The French exports to Chile, in 1842, amounted to about 22,000,000 francs, and the imports from thence, to about 9,000,000.

When Francisco Pizarro had overthrown the empire of the Incas in Peru, he sent Almagro to subjugate Chile. With great loss of men, Almagro, passing over the Andes and through the desert of Atacama, entered the northern provinces without resistance, these districts having previously been dependent on the Peruvian empire. But farther south he met the more warlike tribes, and made no great progress. His successor, Valdivia, advanced to the Biobio, and founded the town of Santiago in 1541. For more than 200 years the Spaniards tried to establish their authority in the south, but without permanent success. The struggle for independence against the mother-country commenced in 1810, and terminated in 1818, by the battle of Maypù. A republic was formed, at the head of which is a supreme director. The congress is composed of a senate, consisting of twenty members at the utmost, and a house of representatives, to which a deputy is sent for every 15,000 persons. Many internal commotions have since occurred; but Chile is the best and most prosperous of the South American republics.

(Molina; Miers; Meyen, *Reise um die Erde in* 1830-32; Poeppig, *Reise in Chile, Peru, und auf dem Amazonenstrome in* 1827-32; Wilkes, *United States' Expedition;* Macgregor's *Statistics.*)

CHI'LIAD (from χιλιάς) is (or rather was) used to mean a thousand consecutive numbers. Thus from 1 to 1000 forms the first chiliad, from 1001 to 2000 the second, and so on.

CHILINA, a genus of testaceous mollusks, separated by Mr. Gray from *Auricula*, and including *Auricula dombeiana* of Lamarck, and *Auricula fluviatilis* of Lesson. Locality, South America, in fresh-water streams, with most of the habits of the *Limneæ*.

CHILLINGWORTH, WILLIAM, was the son of William Chillingworth, mayor of Oxford, where he was born in Oct. 1602. In 1618 he was a scholar, and in 1628 a fellow, of Trinity College in that University. While at the university he was sought out by the famous Jesuit, Fisher, alias Johannes Perseus, by whom he was convinced of the necessity for an infallible living 'Rule of Faith.' On this he at once adopted the Catholic system, wrote out his reasons for abjuring Protestantism, and joined the Jesuits in their college at Douay.

After the lapse of a few months, the arguments addressed to him by his godfather, Dr. Laud, then bishop of London, induced him to abandon Catholicism, and he returned to Oxford in 1631, where he passed about four years in reconsidering the Protestant tenets. In 1635 he published his 'Religion of Protestants, a safe Way to Salvation.' In this work Chillingworth asserted the principle that the Holy Scriptures were to be considered the sole authority of Christians, to the utter exclusion of ecclesiastical tradition; and he also maintained the right of private judgment. It excited great attention, passed through two editions in less than five months, and produced a controversy that lasted for years. Chillingworth was however unable to reason his conscience into an approval of the Thirty-nine Articles, and refused to accept any preferment in the Church, but, after a time, was persuaded by the arguments of Drs. Sheldon and Laud, that peace and union are the real object of subscription, not belief or assent—a doctrine held by Archbishop Sancroft and many other eminent divines. Accordingly he accepted the chancellorship of Salisbury with the prebend of Brixworth, Northamptonshire, annexed in 1638. Chillingworth was attached very zealously to the royal party, and wrote a treatise (unpublished) on 'The Unlawfulness of resisting the lawful Prince, although most impious, tyrannical, and idolatrous.' Having accompanied the king's forces under Sir R. Hopton to Arundel Castle, he was there with his comrades taken prisoner by the parliament army under Sir William Waller; and falling ill he was thence conveyed to the bishop's palace at Chichester, where he died, and was buried in Jan. 1644. The 10th and best edition of the 'Religion of Protestants' is that in fol., 1742, with Sermons, &c., and a life of the author by Dr. Birch. An edition of Chillingworth's whole works has been recently published in 1 vol. 8vo.

CHILOE', an island situated on the western coast of South America, between 40° 48′ and 43° 50′ S. lat., and 73° 20′ and 74° 30′ W. long. It is divided from the continent by the Gulfs of Ancud and Corcovado, and at its northern ex-

tremity by the Strait of Chacao. It extends from N. to S. about 120 miles, and from E. to W. 60 at the widest part. The whole island is mountainous, covered with wood, chiefly a bastard cedar, very durable, which is exported in great quantities to Chile and Peru. The northern and eastern coasts, which are much indented, have many excellent harbours, among which the best are San Carlos, Chacao, and Castro. On the west coast is the Lagoon of Cucao, which is upwards of 20 miles in length, and connected with the sea. The air is very damp; yet the climate is healthy. The domestic animals are cattle, horses, sheep, goats, and swine. The chief exports are woollen cloaks, called *ponchos*, hides, excellent hams, and planks. The soil, being of excellent quality, produces wheat, barley, and all sorts of European vegetables, fruits, and potatoes. A good deal of butter is made, and excellent cider, which is the common beverage. Fish, as well as oysters and other shell-fish, are very abundant, and in some parts are the chief food of the inhabitants. Money is not current in Chiloé; necessaries are obtained by barter, the chief articles given for heavy goods being indigo, tea, salt, and a sort of Cayenne pepper. Tobacco holds the rank of gold in their currency, as it is a monopoly of government, and very high in price.

The interior of the country is not known; all the inhabitants live along the sea-shore, or only at a little distance from it. The people are athletic and robust, and have a fair complexion and light flaxen hair. The principal towns are S. Carlos, which has about 2000 inhabitants, and Castro, which is somewhat larger. The Gulf of Ancud contains a great number of smaller islands, of which about thirty-two are inhabited. The most remarkable are Quinchau, Lemuy, Calbuco, and Llaicha. All these islands form together the Chiloé Archipelago. The province of Chiloé contained in 1832 a population of 43,832. The number of coasting boats belonging to the island in the same year was 1490.

(*Geographical Journal*, vol. iv.)

CHILO'GNATHA, a family of the *Myriapoda* established by Latreille, including the genera *Iulus* (Millepede), *Glomeris* (Pill-millepede), *Polydesmus*, and *Polyxenus*. ('Règne Anim.,' vol. iv. p. 333.)

CHILO'PODA, a family of the *Myriapoda*, established by Latreille, including the Centipedes. ('Règne Animal,' vol. iv. p. 335.)

CHILTERN HILLS. [BUCKINGHAMSHIRE.]

CHILTERN HUNDREDS. A portion of the high land of Buckinghamshire is known by the name of the Chiltern Hills. The stewardship of the Chiltern Hundreds has long ceased to have any duties attached to it, but the nominal office is retained to serve a particular purpose. A member of the House of Commons, who is not in any respect disqualified, cannot resign his seat. A member therefore who wishes to resign accomplishes his object by applying for the stewardship of the Chiltern Hundreds of Stoke, Desborough, and Bodenham, which, being held to be a place of honour and profit under the crown, vacates his seat, and a new writ is in consequence ordered. This nominal place is in the gift of the Chancellor of the Exchequer. As soon as the office is obtained it is resigned, that it may serve the same purpose again.

CHIMA'PHILA CORYMBO'SA, the *Pyrola umbellata* of Linnæus, or Wintergreen, a small evergreen woody plant, common in the pine-forests of the north of Europe, and also in Asia and N. America. The leaves possess diuretic properties joined to a tonic power, and are said to impart strength and comfort to the stomach while they increase the action of the kidneys. Applied externally, they cause redness and vesication of the skin.

CHIMBORAZO. [ANDES.]

CHIMES, a set of bells tuned to the modern musical scale, and struck by hammers acted on by a pinned cylinder or barrel, which revolves by means of clock-work. The term is also applied to the music or tune produced by mechanical means from the bells in a steeple, tower, or common clock.

Chimes differ from *Carillons* (as the last word is commonly understood in England), inasmuch as the bells of the former are acted on by clock-work, those of the latter by keys struck by the hand. But the French apply the term *carillon* to the tune played, and, generally, to the series of bells, whether sounded by machinery or by hand, though the most accurate writers distinguish the latter kind as *le carillon à clavier*. The *carillons à clavier* comprise three octaves of bells, sounded by means of keys, similar to the pedals of an organ, which the performer strikes forcibly with hands clenched and sidewise, the little fingers being guarded by a thick covering of leather. These keyed carillons are found in many towns of Holland and the Netherlands.

CHIMNEY, an inclosed passage for the escape of smoke from a fire-place or furnace, but which also serves the purpose of producing a draught to excite the combustion of the fire. This effect is produced by the heating, and consequent rarefaction, of the column of air inclosed in the funnel or chimney, the rising of which causes a partial vacuum, which should be filled with air admitted either through or over the burning fuel. [SMOKE.]

The term chimney being a general one, it may be well to explain that builders apply the name *fire-place* to the square recess or opening in which the stove is fixed; *hearth* to the flat piece of stone, marble, or metal immediately *under* the fire-place; and *slab* to the large flat stone on the same level, but *before* the fire-place, to which, in common language, the name of hearth is applied. The vertical sides of the opening of the fire-place, and the projections from the wall at each extremity of the slab, are the *jambs;* and the horizontal head of the fire-place, which rests upon them, is the *mantel*. *Covings* are the oblique facings of stone or metal sometimes applied within the jambs to reduce the back of the fire-place. *Funnel* is the general name for the cavity or passage of the chimney; the entrance from the fire-place being distinguished by the name of the *gathering;* the remainder of the passage, to the top of the wall, being often called the *flue*, and

the name *throat* being applied to the junction of the flue and the gathering. The *breast* is that part of the wall of the chimney which faces the apartment; the *back* is the opposite wall; and the *withs* are the narrow partition-walls which form the sides of the flue, and separate it from other flues rising on either side of it. A *chimney-stack* is a wall containing a number of chimneys or flues arranged side by side; the *chimney-shaft* is that part of the stack which rises above the roof; and the *chimney-top* is the horizontal termination of the stack, which is usually surmounted by *chimney-pots*, to contract the upper end of the funnels or flues.

In modern English houses chimney-flues are often formed within the substance of the party-wall, leaving the width and projection of the jambs entirely to the taste of the architect; and, where two adjoining houses are built with the fire-places back to back, two sets of flues are introduced in the same party-wall. Where this is not done, the flues are carried up in the projecting jambs, which are necessarily made large, and in many cases unequal, as in the upper stories it is often inevitable to put two or three flues in one jamb, while the corresponding one has but one or two. Every flue should be carried up of the same dimensions throughout, and without communication with any other. The variations from the straight vertical course, necessary to enable the flues from the lower stories to pass beside the fire-places of the upper stories, are useful in checking the tendency of the chimneys to smoke, and such bends are sometimes introduced for that purpose alone; but all sharp angles and sudden turns should be avoided, as encouraging the lodgment of soot, and impeding the action of the sweeping machine. In some of the best houses all the flues are so constructed as to be swept from openings in the basement story, without entering the rooms into which the fire-places open.

CHIMNEY-PIECE, the assemblage of architectural dressings around the open recess constituting the fire-place in a room, and within which the fuel is burnt, either immediately upon the hearth itself or in a raised grate or open stove. The fire-place being the spot around which persons naturally group themselves in an apartment, the chimney-piece has always been made a principal feature and one chief point for decoration, so much so as to have come to be considered almost essential to the character of a sitting-room. For a long time, indeed, fire-places were used only for one or two principal rooms in a building, and were of very rude and primitive design, the funnel of the chimney projecting into the room, and sometimes sloping forward, downwards, and the opening for the fire-place being a simple arch, with scarcely any attempt at ornament. The more ancient examples are those of mere fire-places rather than chimney-pieces. But as soon as some degree of architectural refinement began to be introduced into the habitations of noblemen, external dressings, constituting a chimney-piece, were added to the fire-place. Some of these, in which the Gothic style was employed, are marked by a fitness and propriety of character, and a happy union of simplicity with richness. Some examples —one from Tattershall Castle, Lincolnshire, and two from Windsor Castle—are given in Pugin's 'Gothic Specimens,' all of which, in regard to compactness and simplicity of composition, accord much more nearly with modern taste, and have a less 'Gothic' air than the cumbrous and extravagantly ornamented chimney-pieces in the Renaissance style of the Continent and our own Elizabethan. In these the design was carried quite up to the ceiling, so as to form a sort of architectural frontispiece, composed of two or more stages piled upon each other, and adorned with columns, pilasters, caryatides, termini, niches, &c., presenting an overloaded mass of carving and sculpture. But, though such compositions were generally exceedingly capricious, and equally fantastic and coarse in detail, some were real works of art—truly admirable for artistic beauty of design and masterly execution; such as were in the palace of Fontainebleau; two noted ones in the Hôtel de Ville at Courtrai; and one of matchless beauty for its exquisite carvings in chestnut-wood, in the Palais du Franc de Bruges. In our own country, chimney-pieces of the time of Elizabeth and James I. are by no means uncommon: many are remaining, not only in mansions of that period which are still kept up, but in houses which have been almost completely modernised in all other respects.

As the more regular Italian style gained ground, the fashion of chimney-pieces greatly changed. The chimney-piece and fire-place were reduced to nearly their modern proportions and dimensions, whereas the opening or fire-place had previously been of such size that a person might stand within it. At present the *height* of the opening is made nearly the same in all cases, viz. from three to three feet and a half, the *width* alone being increased accordingly as a larger fire-place than usual is required, and the dressings around it extended so as to proportion the chimney-piece in some degree to the size of the room as a piece of architectural furniture in it. When therefore a single fire-place of the usual size is insufficient, as for very spacious rooms or galleries, there are two or even more according to circumstances, and they must of course be placed with strict regard to architectural symmetry.

Marble is now the usual material for chimney-pieces even in ordinary houses, and such very general employment of it for the purpose has caused economy to be consulted by excessive plainness of design and scantiness of workmanship, sculpture being out of the question; the mouldings very few and plain, and the mantel-piece a mere shelf. Black or dark marble is occasionally used for chimney-pieces, but is not well adapted for the purpose, because, instead of relieving the fire-place, the chimney-piece and fire-place together form a dull and sombre mass. Among collections of designs for chimney-pieces, Piranesi's 'Maniere di ornar di Camini' is unrivalled for magnificence of ideas.

CHIMNEY-SWEEPER, a person whose trade it is to cleanse foul chimneys from soot. The actual sweepers were formerly young boys, who were

taught to climb the flues, and who were often ill-treated by their masters. In 1834 the Act 4 & 5 Will. IV. c. 35, was passed for the better regulation of Chimney-sweepers and their Apprentices, and for the safer construction of Chimneys and Flues. From that date no child who was under ten years of age could be apprenticed to a chimney-sweeper. A particular form of indenture of apprenticeship is required in the case of chimney-sweeps. In 1840 another act (3 & 4 Vict. c. 85) was passed, 7th August, for the regulation of chimney-sweepers and chimneys. This act annulled existing indentures of chimney-sweepers' apprenticeship, where the apprentice was under sixteen, and prohibited in future the binding of any child under that age. Any person who compels, or knowingly allows, any young person under the age of twenty-one to ascend or descend a chimney, or enter a flue, for the purpose of sweeping or extinguishing fire, is liable, under this act, to a penalty not exceeding 10*l.*, and not less than 5*l.* That part of the Act 3 & 4 Vict. c. 84, which related to chimneys is repealed by 7 & 8 Vict. c. 85 (the Metropolitan Buildings Act), which substitutes new regulations as to the dimensions and construction of chimneys.

About the beginning of the present century, a number of individuals joined in offering considerable premiums to any one who would invent a method of cleansing chimneys by mechanical means, so as to supersede the necessity for climbing boys. Various inventions were produced, of which the most successful was that by Mr. George Smart.

The principal parts of the machine are a brush, some hollow tubes which fasten into each other by means of brass sockets, and a cord for connecting the whole.

CHIMONA'NTHUS, a Japanese genus of calycanthaceous plants, whose species or varieties are called in the gardens Japan Allspice. About the end of November the leaves fall from the bushes, and are succeeded by the flowers, which appear at Christmas-time upon the naked branches. There is probably no plant more deliciously fragrant than this, the orange and violet not excepted. The plant is quite hardy if protected a little by a wall or by palings.

CHIMPANZEE. [APE.]

CHINA is an extensive country in Eastern Asia, constituting the principal portion of the Chinese Empire. It is situated on the borders of the Pacific, and extends from about 20° to 41° N. lat., and from about 98° to 124° E. long. Its greatest length is about 1600 miles; its breadth varies from 900 to 1300. Its area is about 1,300,000 square miles. It is bounded N. and N.W. by other portions of the Chinese dominions, S. and S.W. by Cochin China, Siam, Birmah, and Tibet, and E. by the Pacific Ocean.

Coast, Mountains, &c.—About 240 miles of coast from the borders of Corea are bold and rocky; then come 360 miles of sandy coast; then 350 bold and rocky, to the Bay of Pe-tsche-li; then 450 low and sandy, to the parallel of Chusan Island; then 800 miles from Chusan to the Bay of Canton, mostly high, bold, and rocky. A number of low sandy islands form the coast near Canton, westward of which there is an alternation of bold and of low shores. The whole coast extends about 2440 miles.

A considerable portion of China is covered with mountains. Its western boundary extends to the chains which constitute the eastern edge of the high table-land of Eastern Asia; but only the most eastern of these ranges lies within the boundary of China. It may be considered as beginning in the most southern bend of the Yang-tse-kiang, between 101° and 103° E. long., and as extending hence in a N.N.E. direction, and terminating in the great northern bend of the Hoang-ho, between 107° and 111° E. long. This mountain-range, which is called Siue-ling (Snow-range), or Yung-ling, contains a considerable number of snow-capped summits. The snowy mountains are numerous between 30° and 36° N. lat., and more especially between 32° and 34°. Four subordinate ranges spring from this, and extend across China nearly from east to west. The hilly table-land of Yunnan lies south of the Snow-range; and from its eastern edge spring the two ranges of Yu-ling and Nan-ling. The Nan-ling is the most extensive mountain system in China. There are three mountain-passes in this range, to connect the north and south of China: through these passes all merchandise is carried on men's backs. Of the four subordinate ranges above alluded to, the other two are the Tapa-ling and the Pe-ling. These ranges separate the valleys of the great rivers with which China is watered; and many of the peaks are considerably above the snow-line. The intercourse across these two mountain chains, and the intervening country, is maintained by an artificial road, exhibiting much engineering skill. Besides the great range and its four branches, China is intersected by many minor chains.

The whole surface of China may be divided into the mountainous country, the hilly country, and the great plain. The mountainous country comprehends more than half of the whole, and the meridian of 112° may be considered its eastern boundary, but to the north of the Hoang-ho it extends as far as 114°. All this immense tract of country is covered by mountains and valleys. The mountains are for the most part rugged and unfit for cultivation; the valleys are mostly fertile and well populated. The hilly country lies to the east of 112° E. long., and extends north to the Yang-tse-kiang. The hills are generally not too steep for some kinds of cultivation, and the valleys, being plentifully watered by lakes and rivers, are in a high state of cultivation.

The great plain occupies the north-eastern part of China. It extends in length 700 miles from the Great Wall, north of Peking, to the confluence of the rivers Yang-tse-kiang and Kan-kiang (30° N. lat.). Its width varies from 150 to 250 miles in the northern half, and from 300 to 500 in the southern half. It presents an area of about 210,000 square miles. The northern half of the plain has mostly a sandy soil, impregnated with saline matter, and fitted for the growth of wheat and millet. The eastern portion of the southern half is low and swampy, fitted for the growth of

rice, while the western or inland districts, having a firmer and drier soil, but sufficient water, are fertile in cotton, wheat, tobacco, and tea. Through this plain runs the Imperial Canal, 700 miles long, from Hang-tcheou-foo to Lin-tchin-cheou. Its width, depth, embankments, cuttings, flood-gates, and bridges are on a large scale. It serves partly for navigation, partly for draining, and partly for irrigation. This canal, together with the rivers, gives a very extensive system of inland navigation in China. The plain watered by the canal is perhaps the most populous country upon earth. It contained, in 1813, 177,000,000 of inhabitants. To protect this rich plain the Great Wall was erected, which incloses China on the northern boundary, and extends over mountains and rivers for about 1400 miles. This great work was constructed about 200 years before the Christian æra, as a defence against the nomadic tribes of Tartars. The main substance of the wall is earth or rubbish, retained on each side by a thick casing of stone and brick, and terraced by a platform of square tiles. From its eastern extremity there is an extensive stockade of wooden piles, inclosing the country of Mougden. The total height of the wall is about 20 feet, on a basis of stone projecting 2 feet under the brickwork, and about the same in height. The thickness of the whole wall at the base is 25 feet, diminishing to 23 at the platform. The towers are 40 feet square at the base, diminishing to 30 at the top, and about 37 feet in height.

Numerous rivers drain and water China, but by far the greater number flow into the HOANG-HO and YANG-TSE-KIANG, two of the largest rivers of the globe. Among the rivers which do not belong to the systems of those two great rivers are the Pei-ho and the Ta-si-kiang. The Pei-ho or White River rises in the mountains north-west of Pekin, and flows into the sea eastward of that city; it is navigated by more vessels and boats, perhaps, than any other river in the world. The Ta-si-kiang, or river of Canton, rises near the town of Yunnan, and flows into the sea near Macao and Hong Kong.

Climate and Productions.—China is a cold country in comparison with others in the same latitude. Peking is as far to the south as Naples, yet its average temperature is 9° lower. The winters are colder and the summers are hotter than in western Europe in the same parallels. In the southern provinces, near Macao and Canton, the months from November to February are intensely dry and cold; March and April bring fogs and a milder temperature; in May, the rains are excessive; from July to September the weather is intensely hot, and accompanied by hurricanes called typhoons, which are much dreaded for their violence and devastating effects; in October there is a gradual autumnal preparation for winter.

The animals, as well as vegetables, of China belong principally to the temperate zone. The larger and more ferocious descriptions of carnivorous quadrupeds are not common in a country so well peopled and cultivated. In the forests of Yunnan, to the south-west, the Bengal tiger is said to exist, and the animal is well known to the Chinese; but at Canton, so nearly in the latitude of Calcutta, it is quite a stranger. Lions are almost a fabulous animal with them. The woods of the south abound in a small but fierce description of wild cat, which is fattened in cages for the table. The domestic dog of China is uniformly one variety, about the size of a moderate spaniel, of a pale yellow and occasionally a black colour, and a coarse bristly hair on the back; sharp upright ears and peaked head, not unlike a fox's, with a tail curled over the rump. Bears are common in the hilly wooded parts of Chansy, west of Peking. Deer, antelopes, sheep, cows, buffaloes, dromedaries, horses, asses, mules, swine, are met with in different provinces of the empire. The birds include gold and silver pheasants, geese, the fishing cormorant, the quail, the ring-dove, and the crow. Of reptiles, the lizard, the tortoise, and a few other kinds, have been met with; but the country generally is remarkably free from them. Among fishes may be named the golden carp, the rock-cod, the pomfret, the sole, and the sturgeon. The insects compriso locusts (which commit great ravages), the scorpion, the centipede (called by the Chinese exactly the same name, pĕ-tso, 'hundred feet'), spiders, butterflies, and many others.

At the head of Chinese botany may properly be placed the tea-plant. [THEA.] The *Camellia* bears the same name in China with the tea-shrub, and possesses most of its botanical characters; they in fact constitute two genera very closely allied. The *Laurus camphora*, one of the most remarkable productions of China as well as Japan, is a fine timber tree, growing in the southern provinces to the height of fifty feet. From the seeds of the *Dryandra cordata* the Chinese extract a varnish for boats, and for the coarser implements of domestic use. The fine Japan varnish however is obtained from the *Tsie-shoo*, or lacker-shrubs, a species of *Rhus*, from which the varnish distils like gum. The Chinese procure their tallow from the seeds of the *Croton sebiferum*. The plant from which the pithy substance, vulgarly called 'rice-paper' is prepared, seems to be a leguminous species growing in marshes, and found in some parts of India. *Smilax*, or China root, rhubarb, and an inferior sort of cinnamon, are among the other plants of China.

Among the most remarkable fruits of China are three distinct species of orange, one of which is the China Orange of Europe, a species of citron, and four fruits peculiar to China called the *Lichi*, the *Loong-yen*, the *Loquat*, and the *Wampee*. At the head of cultivated flowers the Chinese place the *Nelumbium*, in consideration of both its beauty and utility. The seeds, in form and size like an acorn without its cup, resemble nuts in flavour: the roots are sliced and eaten as fruit. Another highly esteemed flower is the *Olea fragrans*, allied to the olive of Europe, and remarkable for the fine scent of its blossoms. The famous *Mow-tan*, or Tree-Peony, the *Chrysanthemum Inticum*, valued for the variety and richness of its colours, and the *Choo-lan* (used for scenting tea), are among the list of flowers.

The variety of surface through the wide extent

of the empire affords a rich supply of minerals and metals. Coal, lime, and striated gypsum, or alabaster, are all abundant. Among the minerals are nephrite, gold, silver, copper, quicksilver, and zinc, many of which are wrought in rich mines.

Government and Political Divisions. — The government of China is in principle an absolute despotism, and the succession depends on the will and nomination of the reigning emperor. The authority of a father over his family is the exemplar or type of political rule in this country. It is the object of the first of the 'Four Books' of Confucius to inculcate, that from the knowledge and government of oneself must proceed the proper economy and government of a family; and from the government of a family, that of a province and of a kingdom. The emperor is head of the state religion; and, as high-priest of the empire, can alone, with his immediate representatives, sacrifice in the government temples. No hierarchy is maintained at the public expense, nor any priesthood attached to the Confucian or state religion, as the sovereign and his great officers perform that part.

With respect to the machinery of civil government, the emperor's principal ministers form the 'interior council-chamber;' and the chief councillors are four in number, two Tartars and two Chinese, the former always taking precedence. Below these are a number of assessors, who form the chief council of state. The duties of government are conducted by six boards or tribunals; and besides these there is a board of inspectors or spies. Each province is ruled by a governor, a criminal judge, and a treasurer. The cities are governed by magistrates. The various degrees of official rank are partly indicated by the dress.

The whole amount of military throughout the empire, including the militia of each district, has been estimated at 700,000, of which the largest portion are fixed to their native districts, and cultivate the land, or follow some other pursuit. The superior or Tartar troops are about 80,000. The principal arms of the cavalry are bows and arrows, the bow being of elastic wood and horn combined, with a string of silk. Their swords are generally ill-made, and their matchlocks are considered by them as inferior weapons to the bow and arrow. Some are provided with shields, composed of rattans turned spirally round a centre.

The residence of the emperor and his court for some hundred years past has been removed from Nanking to Peking.

The code of laws by which China is governed is spoken of highly by those Europeans who have studied it, such as Staunton, Ellis, and Davis. Mr. Ellis states that, in comparison with other Asiatic countries, the laws of China are more generally known, and more equally administered; those examples of oppression, accompanied with infliction of barbarous punishment, which offend the eye and distress the feelings of the most hurried traveller in other Asiatic countries, are scarcely to be met with in China; the proportion which the middling orders bear to the other classes of the community appears to be considerable; and an impression is produced highly favourable to the comparative situation of the lower orders. It is a popular maxim with the Chinese, that to violate the law is the same crime in the emperor as in a subject. The moral character of the people is a good deal dependent on the laws by which their daily conduct is moulded. While, on the one hand, they exhibit mildness, docility, industry, and respect for the aged, they are, on the other hand, insincere, distrustful, and jealous.

The revenues of China are derived principally from the land-tax, and the monopoly of salt, to which are to be added something for customs and transit duties. The treasurer of each province deducts the expenses of that province from the receipts, and transmits the balance to Peking. The total revenue has been estimated at 60,000,000*l.* sterling, and the surplus revenue, transmitted to Peking, at 12,000,000*l.*

China is politically divided into provinces, of which seven extend entirely or partly over the great plain; two comprehend the hilly districts, two others the mountainous country along the sea, and the others the mountainous country in the interior.

1. Pe-tche-li extends over the most northern and less fertile of the plain. In it are situated Peking and Pao-ting-foo. 2. Chang-tung comprehends a part of the plain and the peninsula of Chang-tung. It contains the towns of Tsi-nan-foo and Lin-tchin-tcheou. 3. Kiang-su includes the low and swampy country on both sides of the Imperial Canal: it contains the cities and towns of Nanking, Yang-tcheou-foo, Su-tcheou-foo, and Shang-hae. 4. Ngan-hoei, or An-hoi, on both sides of the Yang-tse-kiang, has the chief town Ngan-king-foo. 5. Ho-nan, on the western margin of the plain: chief towns, Khai-fong-foo and Ho-nan-foo. 6. Hoo-pĕ, in the centre of the plain, is one of the most fertile provinces: chief towns, Wu-tchang-foo and King-tcheou-foo. 7. Che-kiang, in the south-east of the plain, is the chief green tea province; its capital, Hang-tcheou-foo, has nearly a million of inhabitants; its chief port is Ning-po. 8. Kiang-si, on the west of the Nan-ling range, is the great porcelain province: chief towns, Nan-tchang-foo, King-te-ching (with nearly a million of inhabitants), and Khan-tcheou-foo. 9. Hoo-nan, in the hilly country, is rich in minerals: chief towns, Tchan-cha-foo, and Yo-tcheou-foo. 10. Fo-ki-an, on the shores of the sea opposite Formosa, is the chief black tea district, and one of the most fertile and flourishing of the Chinese provinces: the chief towns are Fu-tcheou-foo, Tsuen-tcheou-foo, and Amoy, all on the river Mingho: the last-named is the chief port for the province. 11. Quang-tun, or Canton, the southernmost province, contains the celebrated city of the same name, and another very large city named Fochan. 12. Quang-si, occupying both banks of the Ta-si-kiang, is a mountainous province, of which the chief town is Kuei-ling-foo. 13. Kuei-tcheou, north of Quangsi, is a very mountainous province, rich in minerals especially; its chief town is Kuei-yang-foo. Like Quang-si, it contains aboriginal tribes, different from and hostile to the Chinese. 14. Yun-nan, the most south-western province, is an irregular table-land,

and is rich in minerals; the two chief towns, Yun-nan-foo and Yang-tchang-foo, carry on a considerable trade with Birma and Siam. 15. Se-tcheou-an, the largest of the provinces, is a succession of hills and valleys, rich both in mineral and vegetable produce: its chief towns, Tching-too-foo and Koci-tcheou-foo, are places of great population and trade. 16. Shen-si is a rugged country, with wide fertile valleys; its chief town, Si-ngan-foo, is very large, and was once the capital of China. 17. Shan-si, adjoining the great wall, is a mountainous but fertile province; its chief towns are Tai-quen-foo and Tai-tong-foo. 18. Kan-si, the most north-western province, is sterile and thinly peopled: its chief town is Lan-tcheou.

Besides the above there is the province of Leao-tong, or Mougden, exterior to the Great Wall, and bordering on the Yellow Sea. Some of the towns above named are described in separate articles [AMOY; CANTON; NANKING; PEKIN; SHANGHAE]; as also the islands of CHUSAN, HONG-KONG, and MACAO.

Population, Literature, Arts, &c.—A number of natural, social, and political causes combine to explain the dense population which some parts of the country unquestionably contains. The advantages which China possesses from nature have been improved to the utmost by its industrious inhabitants. Agriculture, the source of food, has been honoured and encouraged beyond every other species of industry; and nearly all the food raised is for man, very little fodder for cattle being grown. The laws relating to paternal rights, and to the compulsory marriages of domestic slaves, the obstacles to emigration, the very small amount of war for more than a century, and the general habits of life, all tend to a rapid increase of population in China. In 1743 the population was estimated by Grossier at 200,000,000; Lord Macartney stated it at 333,000,000; a census of 1812 is said to have given the numbers at 360,000,000. The statements however concerning the actual population are received with doubt in Europe, on account of the uncertainty as to the mode of making the census.

In their physical characteristics, the Chinese have been recognised as superior to many other Asiatics. Though the Chinese are allied to the Mongols in the general cast of their features, the harsher points of the latter are softened down considerably in the Chinese. The lips are thick, and the nose is flattened and nostrils expanded, but less so than in the African; the hair is lank, black, and shining, and the eyes and eyebrows are turned upwards at the outer extremities. The beard is thin and tufty. The hands and feet, and the bones of the body generally, are small compared with Europeans. Among those who are not exposed to the climate the complexion is fully as fair as that of the Portuguese; but the sun has a powerful effect on their skins. Up to the age of twenty, or a little more, they are often very good-looking; but soon after that time the prominent cheek-bones generally give a harshness to the features as the roundness of youth wears off. With the progress of age the old men, in most cases, become very ugly, and the old women, if possible, still more so.

The antiquity of Chinese literature is proportionate to that of their language, and has been of course greatly promoted and increased by the invention of the art of block-printing, which they have now possessed for 900 years. Specimens of this literature in various departments have been afforded to Europe by the labours of Staunton, Davis, Morrison, Klaproth, and Rémusat, who followed up the earlier investigations of the Jesuits at Pekin, and have enabled us to form a judgment regarding the merits of compositions which for a long period were considered to be inaccessible, from the difficulties of the language in which they were written. This language is very remarkable. While the letters of our alphabet are mere symbols of sounds, the Chinese characters or written words are symbols of ideas, and alike intelligible to the people of Cochin-China, Japan, Loo-choo, and Corea, with those of China itself. The uniformity however in the written character does not prevent the existence of great diversities in the oral languages of the neighbouring countries and China, and even of the separate provinces of the latter country. These diversities are precisely analogous to the different pronunciation given to the same numeral characters in the various countries of Europe. The Chinese from different provinces could read from the same paper, but they might not understand each other's pronunciation of the symbols used. The roots, or original characters, of the Chinese, are only 214 in number, and might indeed be reduced to a much smaller amount by a little dissection and analysis. These are combined with each other to form other words, or express other ideas, very much in the same way that the individual Arabic numerals are combined to express the infinite varieties of numbers. As the 214 roots, or radical characters, whose combinations with each other form the whole language, singly express or represent the principal objects or ideas that men have occasion to communicate in the infancy of their knowledge, they comprise within their number the heads of genera and classes in nature, and thus afford the elements and means of a philosophical system of arrangement. Great facilities are thus afforded for forming compound symbols. From the nature of the language, the grammar is extremely limited: there are no inflexions of words, and the relation of words to each other in a sentence can only be marked by their position. Much consideration is attached by the Chinese to the graphic beauty of their written characters. The two most usual forms of their character are the printed and the written, besides which, there are the seal, or engraved form, and one or two others. The printed form (analogous to our Roman type) lays claim only to clearness and accuracy; but the written combines correctness with elegance.

Whatever may be the actual antiquity of the Chinese people, no doubt seems now to exist of their having been the authors of what are justly considered in Europe as three of the most important inventions or discoveries of modern times: the art of block-printing, the composition of gunpow-

der, and the magnetic compass. To these may be added two very remarkable manufactures, of which they were unquestionably the first inventors, those of silk and of porcelain. It is curious to contrast inventions of such high utility and importance with the very small progress which the Chinese have made in the sciences, as astronomy, geography, and mathematics, for which they were not ashamed to be indebted to the European missionaries. With regard to the fine arts, the Chinese have not made much progress. In painting, their colours are beautiful, but their perspective is very erroneous. In music, their instruments are mostly tuned in unison, and they have little or no idea of accompaniment. They have certain characters to express the name of every note in their very limited scale, and these they use in writing down their airs.* Their instruments are numerous, consisting of different species of lutes and guitars; flutes and other wind-instruments; an harmonicon of wires, touched with two slender slips of bamboo; bells and pieces of sonorous metal; drums; and a sort of clarionet, which emits as nearly as possible the tones of the Scottish bagpipe.

History.—The Chinese entertain extravagant notions concerning the antiquity of their country; but all before the time of the Emperor Woo-wong, about 1100 B.C., is regarded as little better than fable. The race of Chow governed for 800 years from the time of Woo-wong, when it was succeeded by the race of Tsin, by whom the Great Wall was constructed. Then succeeded the race of Hân, who were in power for about four centuries (200 B.C. to 200 A.D.); then another race for about two centuries; and afterwards, for nearly two centuries more, China was divided into two kingdoms, of which the capitals were Nanking and Honân. The two sections were again united in A.D. 585, and remained under the Tâng dynasty. During this dynasty some Nestorian Christians are supposed to have visited China. From 897 a period of anarchy ensued, during which the Tartars invaded China on the north. The Soong dynasty reigned from 950 till 1281, when it was extinguished by the Mongols. The Mongol power lasted eighty years, when it was followed by the Ming dynasty of the Chinese. The Manchows (formed by a union of the Tartars with the expelled Mongols) extinguished the Ming dynasty in the person of its 13th emperor in 1644; and since that time China has been governed by the Manchow dynasty of Ta-tsing.

**English Intercourse with China.*—The first attempt of the English to open a trade with China was in 1596, when three ships, bearing letters from Queen Elizabeth, were freighted for that purpose, but they were lost on the voyage out; and no further attempt appears to have been made till 1637, when four merchant ships from England arrived in Macao Roads.' The Portuguese were already established at Macao; and, through their intrigues, the English enterprise failed. The East India Company established by degrees small commercial agencies at Amoy, at Ningpo, and on the islands of Chusan and Formosa, which were afterwards given up for a depôt at Canton; but the traffic was very small throughout the 18th century.

Lord Macartney was sent to China in 1792, chiefly to obtain permission for British ships to trade to other Chinese ports besides Canton; but in this object he failed: the position however of the traders at Canton was improved by the embassy. In 1808 a dispute arose out of the contentions of the English, French, and Portuguese in respect to Macao; and in 1814 another disturbance resulted from the hostilities between the English and the Americans at Canton; but circumstances arose out of this favourable to English trade. Lord Amherst's embassy, sent in 1816 to establish better relations with the Chinese government, failed, as that of Lord Macartney had done. The English trade at Canton however continued pretty quiet for the next twenty years.

The exclusive trade of the East India Company with China terminated on the 22nd of April, 1834, and several private ships soon afterwards quitted Canton with cargoes of tea for the British Islands. Commissioners were appointed by the English government to superintend the trade at Canton; but it soon appeared that the authority of these officers was not recognised by the court of Pekin. The chief superintendents successively, Lord Napier, Mr. (now Sir J. F.) Davis, Sir George Robinson, and Captain Elliot, had to bear many annoyances and insults during 1834–5–6; the trade of Canton was frequently interrupted; and many collisions took place between the English and the Chinese. The East India Company had carried on a large opium trade with China: the emperor discountenanced that trade; but the subordinates at Canton connived at it. The consequence was that vast quantities of opium entered China contrary to law; and during 1837 Captain Elliot was placed in much difficulty by the conflicting interests which surrounded him.

In 1838 many squabbles arose out of the formalities which the Chinese government required from the English, but which the home government could not permit. There arose also many disputes respecting opium-smuggling, which came at length to such a height, that on the 26th of Feb., 1839, all the foreign factories at Canton struck their flags, and trade was suspended. Commissioner Lin was sent from Pekin to Canton to settle the differences. He ordered all the opium then in Canton River to be destroyed; and, as Captain Elliot felt himself too weak to resist the order, it was put in execution, and 20,283 chests of opium were destroyed. During the greater part of that year the situation of the British at Canton was very precarious; but vessels of war arrived from India, and checked the impetuous course of Commissioner Lin.

In January 1840, an imperial edict forbade any further trade between China and England. Hostilities immediately commenced; the English government sent out orders to demand reparation for the opium destroyed, and to place the relations between the two governments on a definite footing. While one part of the British armament (now become formidable) blockaded Canton, another sailed along the coast, attacked Amoy, took Chusan, entered the river which led up to Pekin, and compelled the emperor to receive a

letter from Lord Palmerston. Commissioner Keshan was appointed to supersede Lin at Canton, and to arrange matters with the British. While the negotiations were going on in January 1841, the emperor issued private orders to destroy all the English shipping; the plan was frustrated, and war immediately recommenced. The British vessels, especially the iron steamer Nemesis, made such formidable demonstration of force in the Canton River, that the Commissioner Keshen came to a treaty, by which Hong Kong was to be delivered up to the English; 6,000,000 dollars were to be paid as indemnity, and trade was to be resumed. This treaty was treacherously broken by the Chinese; hostilities recommenced, and Canton was only saved from a siege by another treaty in May, by the terms of which the Chinese paid 5,000,000 dollars, and the English forces removed from Canton.

In August 1841, Sir Henry Pottinger arrived in China, bearing full powers to complete a permanent arrangement of all the disputed points. A large armament sailed along the northern shore of China; Amoy was taken in September, and Tinghae, Chinhae, and Ningpo, in October. During the winter many engagements took place between the English and Chinese. In June 1842, the English force entered the great river Yang-tse-kiang, and in the same month the towns of Woosung and Shanghae were taken. At Chin-keang-foo, where the Imperial Canal enters the river, a Tartar force, superior to any soldiers that the English had met with in China, was defeated; the Tartars, after this, commenced a dreadful slaughter of their wives and children, to prevent them from falling into the hands of the enemy. All the trade was stopped between Chin-keang-foo and Nanking; and Sir Henry Pottinger prepared for the siege of Nanking. But matters had now arrived at such a crisis, that the Emperor sued for peace in earnest, and a definitive treaty was signed at Nanking, Aug. 29, 1842.

The most important provisions of this treaty are as follow:—British subjects are allowed to reside at the ports of Canton, Amoy, Foochow, Ningpo, and Shanghae, and a consul is to be appointed to reside at each of the five ports. The island of Hong Kong is ceded in perpetuity to Great Britain. The Emperor of China agrees to pay 21,000,000 dollars, namely, 6,000,000 for the opium destroyed by Lin, 3,000,000 as the amount of debts due by insolvent Hong merchants at Canton to British traders, and 12,000,000 as indemnity for the expenses of the war; 6,000,000 to be paid immediately, 6,000,000 in 1843, 5,000,000 in 1844, and 4,000,000 in 1845. The company of Hong merchants are dissolved, and British merchants are permitted to carry on their mercantile transactions with any persons whatever. All British subjects, whether natives of Europe or India, who may be in confinement in any part of China, to be unconditionally released. Tables of tariff to be established at each of the five ports. Correspondence between the officers of both governments to be on terms of equality. The military post at Chinhae and the islands of Koolangsoo and Chusan to be held by the British till the money payments and the arrangements for opening the ports to British merchants are completed.

A supplementary treaty was agreed on, October 8, 1843, for regulating the terms of commercial intercourse at the five ports. A treaty was afterwards formed with the United States, whereby that country is allowed to trade at the free ports. Since then, the same powers have been given to other countries.

After the signing of these treaties little else of a political character occurred in China, the arrangements of both countries being directed towards the commerce of the five ports. Ill-will however occasionally manifested itself at Canton; and in April 1847 the Bogue Forts at Canton were captured by the English, in order to obtain redress for various insults. This led to new hostilities, and to a new convention. In the autumn of the same year (1847), Sir J. F. Davis, now governor of the British settlement at Hong Kong, endeavoured to establish commercial relations with the state of Cochin China, but without success.

Annual Reports are now presented to parliament respecting the trade at the five free ports at China. These reports are prepared by the five consuls, and sent to Sir J. F. Davis at Hong Kong, by whom they are transmitted to England.

In the Report for 1846 (presented in 1847), it appears that Shanghae is rapidly progressing. More than a million pieces of cotton goods were imported from England in that year. The exports included one-fifth of all the tea, and two-thirds of all the silk, destined for England. It seems to be the general opinion that Shanghae will be the greatest of the Chinese ports before long: it is the port for the rich province that contains Nanking. Ningpo has failed to establish itself as a great mart of trade, on account of the superior local advantages of Shanghae: its imports and exports are very small. Foo-chow also has hitherto failed to attract much British commerce to itself. Amoy is flourishing, and promises to be an important place of trade. Canton still remains an important centre of commerce; but there seems reason to expect, that as Shanghae is nearer to the heart of the empire, the latter port will gradually acquire a pre-eminence over the former.

The British trade at the five ports in 1845 was of the following value:—

	Imports.	Exports.
Canton	£2,321,692	£4,492,370
Shanghae	1,082,207	1,259,091
Foo-chow	43,981	40,293
Amoy	147,494	15,478
Ningpo	10,398	17,495
	£3,605,772	£5,824,727

The values for 1846 (British trade alone) were:

	Imports.	Exports.
Canton	£2,213,116	£3,332,021
Shanghae	810,200	1,352,530
Foo-chow	nominal	nominal
Amoy	167,935	8,436
Ningpo	5,388	5,787
	£3,196,689	£4,698,774

The trading vessels which have visited these ports, besides British and Chinese, are American, Swedish, Spanish, Bremen, and Hamburg; but the British trade largely exceeds that of all the rest combined.

The high anticipations formed in 1842 of the prospective amount of British commerce with China have not yet been realised. A committee of the House of Commons met in 1847 to inquire into the probable causes of this failure. From the Report of the Committee it appears that China has only three commodities, which are sent largely into England in payment for British manufactures, viz. silver, silk, and tea. It is supposed, by those who know China best, that the amount of silver sent out of China cannot be largely increased beyond its present annual amount without impoverishing that country; and that very little farther increase of British manufactures can be paid for by the Chinese in silver. The sale of China silk is large, and is increasing; but the rate of increase is expected to be slow, on account of the competition offered by India and Italy, in respect to this commodity.

It is therefore the opinion of the committee, and of merchants and manufacturers generally, that British goods can be taken in China in increased quantity, only on the condition of England purchasing more tea from China. How is this to be done? The teas most in demand cost about 9*d.* per pound in China; and the duty payable in England is 2*s.* 2½*d.* per pound—nearly three times as much as the value of the commodity. It is argued that, if the duty were reduced to 1*s.* per pound, the consumption would be largely increased in Great Britain, and that of British manufactures in China. This question is now (Feb. 1848) before the legislature. The English customs' duty on tea in 1846 amounted to the enormous sum of 5,110,897*l.* The unwillingness to touch such a revenue as this is understood to be the chief obstacle to a lowering of the duty.

The whole exports of Great Britain and Ireland to China were, in four years, as follows:—

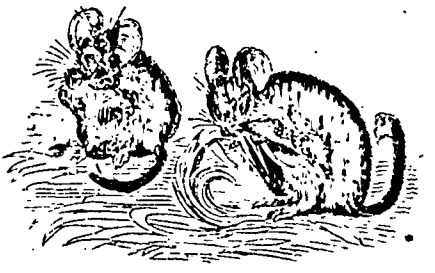
1843 . . .	£1,456,180
1844 . . .	2,305,617
1845 . . .	2,394,827
1846 . . .	1,686,186

The total imports into China in 1845, from all countries, amounted to 43,000,000 dollars (of which nearly half was for opium). The total exports to all countries, 39,000,000 dollars. In the year ending June 30, 1845, England imported 53,959,666 lbs. of tea, and 10,727 bales of silk from China. In the year ending June 30, 1846, the quantities were: tea, 57,484,561 lbs. silk, 18,600 bales.

(Du Halde; Staunton; Lindsay; Davis's *China;* Ritter's *Asia;* Hall, *Voyages of the Nemesis;* Jocelyn, Ouchterlony, and others; *Narratives of the Chinese War; Parliamentary Papers.*)

CHINA-WARE. [PORCELAIN.]

CHINCHILLIDÆ, a small natural family of the Rodent Mammalia (order *Rodentia*), established by Mr. Bennett for the reception of the *Chinchilla,* and some allied animals, as *Lagotis,* and *Lagostomus.* Upper incisors, simple; molars, $\frac{4}{4}$, consisting of two or three tænial or riband-like bony lamellæ, or plates parallel with each other, entirely surrounded with a vitreous substance; the crowns exactly opposite to each other and flattened by attrition. The posterior limbs are nearly twice as long as the anterior. The tail is produced, with long and somewhat bristly hairs at the tip.



Chinchilla lanigera.

The *Chinchillidæ* are gregarious and subterranean in their habits, and mild in their disposition. They are all natives of South America. The Chinchilla is in request for the sake of its fur. That which comes from Peru is rougher than that brought from Chile, but not always so beautiful. Great numbers of these animals are caught in the neighbourhood of Coquimbo and Copiapó, generally by boys with dogs, who bring them to Santiago and Valparaiso, whence they are exported. The Peruvian skins are either brought to Buenos Ayres from the eastern parts of the Andes, or are sent to Lima. The extensive demand in Europe for this fur has occasioned a very large destruction of these animals. For a detailed history of the Chinchilla, see 'Gardens and Menageries delineated;' for an account of the species of *Lagotis* and *Lagostomus,* see 'Transactions of Zool. Soc.' vol. i.; see also 'Proceeds. Zool. Soc.' for 1831; 'Transactions Zool. Soc.,' vol. i. for anatomy of Chinchilla; and Brookes in 'Linn. Trans.,' vol. xvi. for anatomy of *Lagostomus* (Viscacha, or Biscacha, and the Diana Marmot of Griffith's edit. of Cuvier).

CHINESE ARCHITECTURE. The architure of the Chinese may be considered as unique in its style. The materials employed are wood, of which that most in use is the nan-mou, a kind of cedar: stone, marble, bricks, bamboo, and glazed or porcelain tiles are also employed. The construction of houses is directed by a public functionary, whom we may not inaptly designate a district surveyor. Every one is obliged to build his house according to his rank, and for every house a certain size and details are fixed. The ordinary habitations have one floor. The houses called heou, that is of many floors, were once very much the fashion, and some were built about 211 feet high. Wooden columns, so placed as to support the roof, are common, and are from eight to ten diameters in height. They are fixed on stone or marble bases, but have no capitals. The roofs,

which are slightly constructed of bamboo, are often double, and resemble one roof rising out of the other: they turn up at the eaves, at the angles of which are hung grotesque figures of dragons, &c. Not the least singular appearance in a Chinese house is the door, which is often a complete circle; the window frames and sashes are formed of small pannels of various forms moulded out of clay, and neatly joined together. The sills of doors are of stone. The palace of Pekin is on an immense scale, 2513 feet by 3235 feet. It is divided into a number of courts, is composed of towers, galleries, porticoes, halls, and immense buildings, and, as a whole, has an imposing appearance.

Almost all the temples differ in their plan. That of Honang presents, first, a very extensive court with three rows of trees which lead to an open vestibule, the ascent to which is by a step; this vestibule leads to another, in which are four colossal seated figures, formed of stucco; this last vestibule leads into another great court surrounded with colonnades and rooms behind them for the priests. The court contains three square temples, equidistant, and set upon a plinth along the centre of the court; they are two stories high, and surrounded with columns both above and below, and filled with idols. At the four corners of the court are other smaller and somewhat similar edifices but without columns, in which the chief priests reside. Two smaller courts are placed on each side of the centre of the large court; these are surrounded by the kitchens, refectory, and hospitals; all the buildings are covered with green varnished tiles.

The towers which we call pagodas are very numerous in China. The most celebrated is at Nanking, and is commonly called the Porcelain Tower. The plan is octagonal, with a diameter of 40 feet, each face being 15 feet wide. It has nine stories, and each story has a roof and an elaborate balcony railing. At the angles of the roof bells are hung.

Triumphal arches erected to the honour of women, as well as men, are very common. In the smaller towns they are built of wood, and the workmanship of many is very coarse. At Ning-po the triumphal arches have three gates, two small and one large, the larger one being in the centre. The door-posts are of stone. The entablature consists of three or four faces, and the architrave is morticed and tenoned, although it is of stone. The ornaments of some of these arches consist of men, birds, and flowers, and the ground is cut away so that the day-light is seen behind: the three openings are also arched.

The Chinese varnish their columns, colour their roofs, and plaster their walls with stained substances of brilliant colours. Ornaments in China are little more than mere flat cuttings out, like the laced railwork of their balconies.

The tombs and monuments of China exhibit a variety of architectural designs, often resembling the familiar forms of their buildings; even the double roof is carved on some mausoleums.

(Alexander's *Costume of China*, and his drawings in the museum of the East India House; Sir William Chambers's *Architecture*.)

CHINGLEPUT, a town in Hindustan, is situated in 12° 42′ N. lat., 80° 2′ E. long., a short distance from the eastern bank of the Palar, 38 miles S.S.W. from Madras. The French under Dupleix obtained possession of Chingleput in 1751, but it was taken from them by Captain Clive in 1752, after a short siege. The town is irregularly built, and the houses are of mean appearance. The fort was formerly of great strength, but has been allowed to fall into decay. (Hamilton's *East India Gazetteer*.)

CHINIAN, ST. [HE'RAULT.]

CHINON. [INDRE-ET-LOIRE.]

CHIONEA (Dalman), a genus of dipterous insects of the section *Tipulariæ terricolæ*. One species only, destitute of wings, is known; it is found upon the snow in the woods of Sweden, throughout the winter. (See BORETS for another insect, one of the *Neuroptera*, but wingless, which crawls on the snow during winter.)

CHIOS, called by the modern Greeks, Khio, and by the Italians Scio, is an island of Asiatic Greece, near the west coast of Asia Minor. Chios lies at the entrance of the Gulf of Smyrna, and is separated from the main land by a channel about 8 miles wide. Its length from north to south is about 30 miles, and its greatest breadth about 10. It is mountainous, especially in the north part. Chios was one of the twelve Ionian states founded by the European colonists from Greece, and it was one of the places that claimed Homer as a native.

After the close of the Persian War, B.C. 480, the island passed successively under the dominion of the Athenians, the Macedonians, the Romans, and the Byzantines. The Genoese took it in 1346, and it was governed for a long time by the Genoese family of Giustiniani. Solyman the Great took it in 1566. In 1694 it was taken by the Venetians, but was soon after retaken by the Turks. Under the protection of the Sultana mother, to whom the island was allotted as a kind of jointure, the people of Chios had their own magistrates, and lived in comparative freedom and security. Tournefort, Dr. Chandler, Olivier, and other travellers, represent it as a garden inhabited by a happy people. Its inhabitants amounted to more than 100,000, of whom nearly 30,000 lived at Khio, the capital, a handsome town built in the Italian style, on the east coast of the island. Khio occupies the site of the ancient town of Chios. It had a college with fourteen professors, in which between 400 and 500 youths of the various Greek islands received their education; a printing-office; and a good library. The establishment was supported by voluntary contributions of the Chiote merchants, many of whom carried on an extensive commerce with Italy and other countries.

When the Greek insurrection broke out, the Chiotes remained quiet, until a party of turbulent Samiotes and other Greeks from Candia landed upon the island in 1822, and excited, or rather obliged, the people to join the insurrection. The capadan pasha came with a large force; the Samiotes escaped by sea; the poor Chiotes made hardly any resistance, but were slaughtered by

thousands, their wives and children were carried away and sold as slaves, and the town was burnt.

The wine of Chios is the best in the Levant. The island produces also cotton and silk, besides fruit in abundance.

CHIPPENHAM. [WILTSHIRE.]

CHIPPEWAYS. [NORTH-AMERICAN INDIANS.]

CHIPPING LAMBOURN. [BERKSHIRE.]

CHIRO'NOMUS, a genus of dipterous insects of the family *Tipulidæ*. Mr. Stephens, in his 'Catalogue of British Insects,' enumerates upwards of eighty species of this genus. They are all of small size, frequent marshy situations, and very much resemble gnats. The worm known to anglers by the name of the Blood-Worm is the larva of one species (*Ch. plumosus*). It lives in great numbers in the mud, for the most part under water, and is a favourite food of birds and fishes. It is also preyed upon by certain flies of its own order.

CHIROTES, a bimanous genus of the Saurian reptiles, placed by Dumeril and Bibron under the family CHALCIDES. One species only is known, *Chirotes canaliculatus*, a native of Mexico. Length about 10 or 12 inches; anterior limbs small, with four toes; hind limbs wanting.

CHI'RUS, a genus of fishes of the section *Acanthopterygii* and family *Gobioides*. Cuvier says that he places the genus with hesitation in the above family, and that it will probably one day form the type of a separate family. All the species as yet discovered inhabit the seas of Kamtchatka. They are included in the genus *Labrax* by Pallas, who describes several in the 'Memoirs of the Academy of St. Petersburgh,' vol. ii. 1810.

CHISMOBRANCHIA'TA (Mollusca), De Blainville's second order of his sub-class *Paracephalophora monoica*. The following is his definition of the order:—Organs of respiration, aquatic, branchial or pectinated, situated at the anterior part of the back, in a large cavity communicating with the ambient fluid by a wide oblique anterior slit. Mouth, toothless, but provided with a long lingual riband-like organ. Shell, either none, or internal, or external, very much depressed, with a very large entire aperture, and without any pillar (*columella*).

This definition is incorrect in so far as it states that in some instances there is no shell; for *Coriocella*, the only genus described by De Blainville as being without any shell, has a horny one, as Cuvier observes, though it is very delicate, flexible, and nearly membranous. Cuvier, who places three of the genera, *Sigaretus*, *Coriocella*, and *Cryptostoma*, under his *Capuloides*, a family of his *Gasteropoda pectinibranchiata*, observes, that De Blainville places the greater part of the *Capuloides* under his non-symmetrical *Hermaphrodite Paracephalophora*, or *Calyptracians*, but that they appear to him (Cuvier) to be diœcious. ('Règne Animal,' vol. iii. p. 86.)

The geographical distribution of this group or order is very wide. The species are all marine, and probably herbivorous.

Genera.—*Coriocella;* Example, *C. nigra*, seas of Isle of France. *Sigaretus;* Examples, *S. convexus*, *S. haliotoideus*. *Cryptosoma;* Example, *Cr. Leachii*. *Oxynöe;* Example, *O. olivacea*. *Velutina;* Example, *V. capuloidea*.

CHITONS, CHITON TRIBE, CHITONIDÆ, a natural family of gastropodous mollusks, placed by Cuvier in his order *Cyclobranchiata*, next to the Limpits; but by De Blainville under a section called by him *Malentozoaria*, in which the genus *Lepas* (Barnacles) is also (most strangely) situated.

The Chitons (*Oscabrions* of the French) afford among mollusks the only known instance of a protecting shell formed of many portions, or, as they have been sometimes incorrectly termed, valves, often in contact and overlapping each other, but never truly articulated. This anomalous structure is the probable cause of the various wanderings of those who have each, according to his own view, assigned the Chitonidæ their place, setting too great a value on this multiplication of shelly plates composing a shield or coat of scale armour for the soft parts. These plates are bound together by a coriaceous border, which is either plain or beset with bristles and spines.

The species are numerous, and there are few rocky shores without some of them. As a general rule, the largest are found in warm climates, but there are exceptions; for instance, *Chiton setiger* and *Chiton Bowenii* (*King*) are found on the shores of Tierra del Fuego, and in the Straits of Magalhaens. The Chitons inhabit rocky shores, adhering to stones and other submarine bodies; they are found at depths varying from the surface to 25 fathoms. A section of this genus has been termed *Chitonellus*, but the grounds upon which the genus is founded are very trifling. We may enumerate the following species of Chiton as examples:—*Chiton Chilensis*, Chile; *Ch. Blainvillii*, coast of Peru; *Ch. fasciculatis*, southern coasts of Britain and Europe, coast of Barbary; *Ch. Peruvianus*, *Ch. spinosus*, South Seas; *Ch. spiniferus*, Chile and Valparaiso; *Ch. coquimbensis*, *Ch. magnificus*, Chile; *Chitonellus lævis*; *Ch. larvæformis*.

Fossil chitons are rare. Their detached valves are sometimes found in the calcareous sand of the neighbourhood of Paris, and in the English crag.

(Poli, *Testacea utriusque Siciliæ;* Cuvier, in *Ann. du Mus;* Blainville, in his *Dict. des Sc. Nat.*, and also in his *Malacologie;* Deshayes in *Encyclop. Méthodique*; also the writings of Broderip, Gray, Quoy and Gaimard, Rang, Sowerby, Wood, and others.

CHITORE. [RAJPOOTANA.]

CHITTAGONG, a district lying to the S.E. of the province of Bengal, is bounded N. by Tiperah, E. by Birma, S. by Aracan, and W. by the Bay of Bengal. This district lies between 21° and 23° N. lat., and between 91° and 93° E. long. Its length from N. to S. is about 120 miles, and its greatest breadth 50 miles; but the average breadth is probably not more than 25 miles. The area has been estimated at 2987 square miles. The level lands lie near to the sea; the interior is generally hilly, and covered with jungle, the rapid growth of which is favoured by the moistness of the climate. The rainy season sets in

earlier than in most other parts of the province of Bengal, and continues later, sometimes to the middle of November. The country is watered by numerous streams, one-half of which flow towards the Bay of Bengal, and the rest into the Irawaddy. The most considerable of these streams is the Kamaphuli, or Chittagong River, which, at its mouth, forms a secure harbour, but so embayed, that during the continuance of the south-west monsoon it is generally difficult for vessels to put to sea. The channel of this river at the capital, Islamabad, is about a mile broad; but a little higher up its width does not exceed 200 yards, though the tide continues to flow strongly up the river. The source of this river is in Ava, whence it flows south-west to the district of Chittagong. In the valley of the Kamaphuli are some rich tracts of land, which are cultivated by the Bengalese, and yield sugar, cotton, indigo, tobacco, plantains, and ginger. The river Nauf, which forms the southern boundary of the district, is about 70 miles south of Islamabad; it is not navigable: the banks of this river are, for the most part, covered with thick jungle. Between the hills are several well-watered plains and valleys, of small extent, which are cultivated partly by Hindoos of Bengal, and partly by Mughs of Aracan. The majority of the Mughs who have settled in Chittagong are traders and mechanics, only a small proportion having become cultivators. The population of Chittagong has been estimated at about 1,000,000. The Mohammedan inhabitants exceed the Hindoos in the proportion of three to two. Chittagong was ceded to the East India Company in 1760 by Jaffier Ali Khan, and is now included in the presidency of Bengal. (Rennell's *Memoir of a Map of Hindustan; Report of Committee of House of Commons* (1832) *on Affairs of India.*)

CHIVALRY has commonly been represented as a great institution, invented in the eleventh century, for a grand moral purpose—that of struggling against the deplorable condition of society at that period; of protecting the weak against the strong, and redressing individual injuries. It arose much more simply, more naturally, and more silently. It took its birth in the interior of the feudal mansions, without any set purpose beyond that of declaring, first, the admission of the young man to the rank and occupation of the warrior; secondly, the tie which bound him to his feudal superior—his lord, who conferred upon him the arms of knighthood.

In the course of its development, when once the feudal society had acquired some degree of stability and self-confidence, religion and imagination, poetry and the church, laid hold of chivalry, and used it as a powerful means of attaining the object they had in view, of meeting the moral wants which it was their business to provide for. So early as the ninth century we find religious ceremonies associated with the Germanic practices on these occasions; and in the twelfth century the ceremonies were numerous and solemn.

The young aspirant to knighthood had to bathe, as a symbol of purification, and on coming out of the bath was invested with a white tunic as a symbol of purity, a red robe emblematic of the blood he was to shed for the faith, and a black doublet as a token of his mortality: he had to fast for twenty-four hours, and to pass the night in prayer in some church, either alone or with priests: he took the sacrament, heard mass, and usually a sermon on the duties of a chevalier, after which the sword of knighthood was hung round his neck by the priest, accompanied by his benediction. After these religious ceremonies, the knights in attendance, or sometimes ladies, arrayed him in complete armour except the helmet; he was then *dubbed* by his lord, and received the *accolade*, or blows with the sword on the shoulders. Thus knighted, the young man put on his helmet, mounted his horse within the church, brandished his lance, and flourished his sword, to show his readiness to do battle for the faith, and then quitted the church to exhibit himself to the populace.

It is easy to recognise in all this the influence of the priesthood, studious to associate religion with every circumstance of a solemnity so important in the warrior's life. Whatever evils resulted from the unscrupulous and improvident use which the Roman Church made of this direct influence over the power of the sword, it undeniably made use of the chivalric institutions which feudalism had brought forth, in labouring to introduce internal peace in society, and a stricter and more comprehensive morality into individual conduct.

In proportion as this endeavour succeeded, chivalry became the ideal standard of the aspirations of men, and the source of their most exalted pleasures. Poetry then laid hold on chivalry, as religion had done. As early as the eleventh century, the chivalric ceremonies, duties, and adventures formed the mine to which the poets resorted for the means of charming the people; of at once gratifying and stimulating that craving of the imagination, that thirst for incidents more varied and more stirring, for emotions purer and more elevated, than real life affords. The poetical remains that have descended to us from that age show that the poet imposed upon the chevalier the fulfilment of the same duties, and the practice of the same virtues, as were inculcated more solemnly by the priest.

It is an oft-repeated observation, that all this was mere poetry, a fine chimæra, bearing no resemblance whatever to the reality. The period before us is undoubtedly one in which we find the greatest amount of crime and violence, in which the public peace was most incessantly disturbed, in which the most dissolute manners prevailed. Yet it is undeniable that the chivalric morality and poetry existed simultaneously with these disorders, with this barbarism, with all this deplorable social state. The moral conceptions of men rose far above the practice of their lives. Nor let it be thought, because those conceptions did not govern their actions, because their practice so strangely belied their theory, that the influence of the theory was absolutely null. The habitual judgment of men upon human actions is not without its effect. For instance, at no period perhaps has the intercourse between the sexes been more licentious; yet never

was purity of manners more strongly enjoined or more feelingly described. Nor was it a theme for poetic eulogy alone. We find from a multitude of testimonies that the public thought in this particular as the poet spoke, that the prevailing moral notions were pure and noble amidst all the rudeness and licentiousness of conduct.

This, then, was the grand moral characteristic of chivalry, which entitles it to an important place in the history of modern civilisation. If, on the other hand, we regard it not in a moral but in a social point of view, not as an idea, but as an institution, it merits but slight consideration; for, though it had a great and stirring part in the world's affairs, yet, as already shown, it did not constitute an actual specific institution at all. It had however given birth to the religious orders, as the Templars, the knights of St. John, and the Teutonic knights; and it was beginning to produce the courtly orders—those of garters and ribands—the knighthood of mere rank and parade. It was destined to tincture yet a long while the manners, the language, and the literature of European society. But the true chivalry, that to which alone the name can strictly be applied, flourished and fell with feudalism.

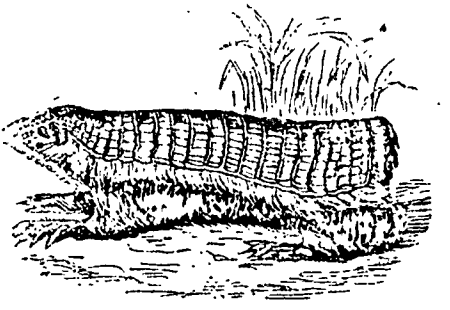
CHIVES. [ALLIUM.]

CHLÆ'NIUS, a genus of coleopterous insects, of the family *Harpalidæ* and section *Patellimanes* (Dejean). According to some entomologists, this genus embraces also the genera *Epomis* and *Dinodes*, all three agreeing in having the tarsi of the anterior pair of legs in the males dilated, and a bifid tooth in the middle of the emargination of the mentum.

Of the genus *Chlænius*, M. le Comte Dejean enumerates 115 species, a great portion of which are European; others are from Africa, India, and North America. South America and Australia appear to be almost destitute of these insects. Six species of *Epomis*, one of which is European, have been enumerated, and four of *Dinodes*.

CHLAMIDOSAU'RUS, a genus of Saurian reptiles founded by Mr. Gray, upon a specimen which was brought home by Captain Philip Parker King, R.N., on his return from his survey of the intertropical and western coasts in Australia, performed between the years 1818 and 1822. One species only is known, *Chl. Kingei*, Gray. It is remarkable for an expanse of skin in the form of two large discs, forming an ample frill to the sides of the neck and throat. The edge of this frill is serrated, and the whole is covered by small keeled scales. There are pores on the thighs. The head is broad, somewhat pyramidal; the tail very long. In size this lizard approaches the Iguanas, and appears to be arboreal in its habits. Its general colour is yellowish brown, variegated with black. Of the use of the expansive frill of this animal we are unable to form an opinion.

CHLAMY'PHORUS, Dr. Harlan's name for a genus of quadrupeds of the order *Edentata*, first described by him in the 'Annals of the New York Lyceum of Natural History,' vol. i., from a specimen presented to the Philadelphia Museum on December 18, 1824, by Mr. William Closeberry, according to whom it is the Pichiciago of the Indians in Mendoza (its native place), on the east of the Cordilleras, in 33° 25 S. lat. and 69° 47' W. long. This singular little animal, of which a specimen, unique in this country, adorns the Museum of the Zoological Society, is covered above with a shield of tesselated armour of an elastic coriaceo-corneous consistence, and also by a perpendicular haunch plate, giving a truncated appearance to the hinder parts of the animal, whence its specific appellation *truncatus*. The back-plate is not fixed



Chlamyphorus truncatus.

by the whole of its under surface to the integuments beneath, but merely rests on the back, free throughout, excepting along the spine of the back and over the top of the head. The tail is of moderate length, enveloped in tesselated armour, paddle-shaped at the extremity, and firmly curved forwards beneath the belly, as if to prevent pressure on the viscera. The whole surface of the body and under side of the shield are covered with fine silk-like hair of a delicate straw colour; the chest is ample; the fore-limbs excessively powerful, but short and clumsy; the hand amazingly thick and compact, and furnished with five powerful but compressed nails, constituting together one of the most efficient scrapers which can possibly be imagined. Hind limbs comparatively weak. Eyes minute, and buried in the silky fur by which the circular orifices of the ears are completely concealed. Head conical, with a pointed muzzle and a terminal cartilage for grubbing in the earth. This little creature, though scarcely 6 inches in length, is formed on a plan of the utmost strength for burrowing habits. Its life is passed under ground, and it works out galleries in the soil, leading a life of seclusion. From its dentition, and the imperfect accounts collected, we have reason to believe that it feeds on worms, insects, and their larvæ. Night is most probably the season of its activity and of its unfrequent visits to the upper world. Molars $\frac{6}{6}$, cylindrical, separate, and encircled with enamel. Other teeth none. For an admirable account, by Mr. Yarrell, of the osteology of this animal (of which two specimens only exist in museum—one in the Museum of Philadelphia; the other, with its skeleton, in that of the Zool. Soc. Lond.), see the 'Zoological Journal,' vol. iii.; also vol. ii., for Dr. Harlan's communication.

We speak not without data when we state that

we regard this little creature as the living representative of a gigantic race of relatives now extinct, but of which the fossil remains have been brought to light.

CHLEN'ACEÆ, a natural order of polypetalous exogens; they are handsome trees or shrubs, but of no known use. The whole of them are wild in Madagascar.

CHLORA, a genus of plants belonging to the natural order *Gentianaceæ*. *C. perfoliata*, yellow-wort, is a native of chalky hills and banks, in most countries of Europe. It is found in England and Ireland, but not in Scotland. It possesses a bitter principle, which renders its action on the system tonic.

CHLORAL, a liquid prepared by Liebig with chlorine and alcohol, from the first syllables of which words its name is derived. Chloral is a colourless, transparent, oily-looking fluid; its smell is pungent, and its taste but slight; its specific gravity is 1.502; at about 200° Fahrenheit it boils, and the vapour condenses unchanged. It is soluble in warm water; and it combines with bromine, iodine, and sulphur. It consists of $Chl^6\ O^4\ C^8$.

CHLORANTHA'CEÆ, a natural order of achlamydeous exogens, allied to the Peppers, and, like them, having an aromatic fragrant odour.

CHLORIC ACID. [CHLORINE.]

CHLORINE, an elementary gaseous body discovered by Scheele, in 1774, while examining an ore of manganese. It was called 'dephlogisticated marine acid,' 'oxygenised muriatic acid,' and 'oxymuriatic acid,' according to the views entertained of its composition. About 1809 Gay-Lussac and Thénard obtained some indications that this gas might be a simple substance; but it was reserved to Sir H. Davy to determine this point, and to win over, gradually, all other chemists to his opinion: he gave it the name of 'chlorine,' on account of the greenish hue of the gas. Chlorine has a very powerful and disagreeable odour, is very suffocating, even when considerably diluted with air, and its taste is astringent: 100 cubic inches weigh between 76 and 77 grains, at the average temperature and pressure; its specific gravity is consequently about 2.7. Faraday has shown that, when this gas is subjected to a pressure of about four atmospheres, and kept cool, it is condensed into a yellow limpid fluid, which is extremely volatile, and, when the pressure is removed, rapidly reassumes the gaseous form; its refractive power is less than that of water, and it is a nonconductor of electricity. Chlorine gas is absorbed and dissolved by water; the aqueous solution has the colour, smell, and taste of the gas itself. The equivalent of chlorine is 36. When moist chlorine gas is exposed to a temperature of 32° Fahr., yellow crystals are formed, which are hydrate of chlorine. Neither light, heat, nor electricity produces any change in the properties of chlorine gas, provided it be dry; but, if it be moist, then light causes it to decompose the water, the hydrogen of which combines with it to form muriatic acid, while the oxygen is evolved in the gaseous form. In the decomposition of the compounds which contain it, it is evolved like oxygen at the positive pole, or anode; except when separated from oxygen, and then it goes to the negative, or cathode.

One of the most curious and important properties of chlorine is the power which it possesses of destroying the colour of animal and vegetable matter in general, and hence its extensive application to the purpose of bleaching. [BLEACHING.] This is effected however not by dry chlorine, but when moisture is present. Chlorine is a powerful supporter of combustion: if certain metals, and especially antimony, in the state of powder, be thrown into chlorine gas, they burn spontaneously; phosphorus also exhibits similar phenomena.

Chlorine is a powerful disinfectant; for this purpose it was first employed by Guyton de Morveau, and within a few years compounds of chlorine and lime, or soda, have been extensively used for this purpose. Sir William Burnett's 'Disinfecting Fluid' consists of chloride of zinc. Mr. F. Smith has recently (1847) introduced a small apparatus for making chlorine, to be used in hospitals, or houses, or rooms, where the air is likely to be tainted. The apparatus is an earthen vessel, not larger than a quart jug, in which sulphuric acid, salt, and oxides of manganese are disposed in such a way that chlorine is generated very slowly, and allowed to escape into the air of the building in such minute quantity as to work its effects in an extremely diluted form.

Chlorine combines with almost every other elementary body, forming compounds of great importance. The compounds with oxygen are numerous, and of wide application. *Chloric Acid* ($Chl^1\ O^5$) is a colourless inodorous liquid, with a sour taste; it may be concentrated by a gentle heat till it acquires an oily consistence, in which state it has a yellow tint, and a peculiar odour. Chloric acid combines with bases to form salts called *Chlorates*. The most important of these is chlorate of potash, which detonates when triturated with sulphur, and explodes with flame when struck in combination with phosphorus: it is one of the most convenient salts for yielding oxygen. *Oxychloric Acid* ($Chl^2\ O^7$) is a limpid and colourless liquid, with a sharp taste; it boils at 392°; by distillation it may be brought to the state of prismatic crystals; it dissolves iron and zinc, with evolution of hydrogen. When combined with bases, this acid produces salts called *Oxychlorates*, which are decomposed by heat, yielding much oxygen, and becoming converted into chlorides. *Peroxide of Chlorine*, or *Chlorous Acid* ($Chl^2\ O^4$) is a green-coloured gas, with an aromatic odour; it is readily soluble in water; when heated to 212° Fahr., it explodes violently, and emits a strong light. *Protoxide of Chlorine*, or *Euchlorine* ($Chl^2\ O^1$) is a yellowish green gas, with a smell like that of burnt sugar; it explodes with the heat even of the hand. Some chemists are of opinion that this gas is merely a mixture of chlorine and peroxide of chlorine; and that the real chemical compound of the two elements, in the proportion above named, constitutes *Hypochlorous Acid*. This acid is a transparent slightly yellow fluid, with a penetrating smell, and a

strong but not acid taste; it burns and stains the skin on the slightest touch; it can scarcely be kept for any considerable time without decomposition. By a particular mode of treatment, *Hypochlorous acid gas* may be obtained from the liquid acid, which it much resembles in colour and smell. Chloride of lime, a bleaching powder, is by some chemists considered to be a hypochlorite of lime.

Besides the various combinations with oxygen, chlorine combines with nitrogen, hydrogen, bromine, iodine, phosphorus, selenium, sulphur, boron, and carbon. *Chlorine* and *nitrogen* form the quadrichloride of nitrogen, an oil-like liquid, extremely explosive; its specific gravity is 1.653; it cannot be frozen even with intense cold; it distils at 160° Fahr., and explodes at about 200°; it consists of $Chl^4 N^1$. *Chlorine* and *hydrogen* form hydrochloric or muriatic acid ($Chl^1 H^1$); its specific gravity is 1.228, and 100 cubic inches weigh 39.145 grains. It is a colourless gas, with a pungent odour and an acrid taste; it extinguishes burning bodies, and excites coughing; it is expanded by heat, and decomposed by electricity; it readily absorbs atmospheric moisture, and then becomes liquid muriatic acid. This liquid has the smell and acid properties of the gas; it has a specific gravity of 1.16. It dissolves many of the metals, and forms chlorides of those metals, hydrogen being expelled. It is largely used in chemistry and the arts. When hydrochloric acid is mixed with nitric acid, it is decomposed, and a solution of chlorine is obtained, which, under the old name of *aqua regia* or modern name of nitromuriatic acid, is used for dissolving gold and platinum. The compounds of chlorine with *bromine*, *iodine*, *phosphorus*, *selenium*, and *sulphur*, are described under the names of those substances. *Chlorine* and *boron* form a *terchloride*, which is a colourless gas, with a specific gravity of 3.942; it is soluble in water, part of which it decomposes. *Chlorine* and *carbon* form four compounds:—the *dichloride* ($Chl^1 C^2$) is in soft, colourless fibres, insoluble in water, fusible by heat, and inflammable; the *protochloride* ($Chl^1 C^1$) is a limpid colourless liquid, with a specific gravity of 1.552, and is vaporized at about 170° Fahr.; the *perchloride* ($Chl^3 C^2$) is an aromatic solid, which burns when strongly heated, and melts at 320°; the *five-four chloride* ($Chl^5 C^4$) is a colourless limpid fluid, which boils at 110°, and has a specific gravity of 1.48.

Medical Uses.—Chlorine, when pure and concentrated, is very deleterious; it acts as an irritant poison. Its action is most violent and speedy when it is brought into contact with the respiratory organs; it then occasions such violent spasms of the glottis, or opening of the windpipe, that instant death may ensue. To enable chlorine to pass this orifice, it must be very largely diluted with atmospheric air or aqueous vapour. A strong solution of it introduced into the stomach causes irritation, inflammation, and death; and even a stream of the gas, or aqueous vapour of it, directed upon the skin, will cause a pricking or stinging sensation, followed by an eruption of pimples, or even vesicles. Notwithstanding its formidable properties, it has been used in several cases with such success that no adequate substitute can be found for it. As a disinfecting agent, it has been mentioned in a previous paragraph. It is, in rare cases, useful in chronic affections of the lungs, if used with caution; and it also renders service in disarrangements of the digestive organs. In case of poisoning by the gas, inhaling ammonia or sulphuretted hydrogen in small quantity is useful. Should an over-dose of the solution be swallowed, chalk, magnesia, or other alkali, or white of egg in water, or a draught of milk, would be proper as an antidote. On the opposite hand, chlorine is said to be a valuable antidote in case of poisoning by hydrocyanic (prussic) acid, sulphuretted hydrogen, or hydrosulphate of ammonia.

CHLORITE. [Talc.]

CHLOROCARBONIC ACID GAS is colourless; it has a strong smell and acid properties; it decomposes water, and is itself decomposed by many metals when heated. The specific gravity of this gas is about 3.44; 100 cubic inches weigh about 107 grains. It consists of Chl^1 Carb. Ox^1. It forms a chlorocarbonate with ammonia.

CHLOROCINNOSE, a compound produced by the action of chlorine upon oil of cinnamon. When pure, it exists in the state of brilliant colourless acicular crystals, which volatilise by heat without change. It consists of $C^{18} H^4 Cl^4 O^2$.

CHLOROCYANIC ACID. [Cyanogen.]

CHLOROFORM, a peculiar compound limpid fluid; it has a specific gravity of 1.480, and boils at 141° Fahr. It is soluble in alcohol and æther; it is precipitated from them by water; and it dissolves iodine, phosphorus, and sulphur. It consists of $Chl^3 C^2 H^1$.

Although mankind had for a long time had recourse to various narcotic agents for relieving pain in disease, it was not till the discovery by Drs. Jackson and Norton, in America, of the narcotising powers of the vapour of æther, that such agents were employed for the purpose of relieving the dreadful suffering endured in surgical operations. This discovery can only be regarded as second in importance to that of vaccination, as a preventive of small-pox, by Dr. Jenner. Scarcely had it been generally known that æther possessed the power we have mentioned, than, in the latter end of the year 1847, Dr. Simpson, of Edinburgh, discovered that the vapour of chloroform possesses the same powers. The discovery that the vapour of chloroform produced the same effect as that of æther produced scarcely less sensation than the discovery of the powers of æther itself. For it possesses many advantages over æther in its application to the production of insensibility. These are—1, A smaller quantity of chloroform than of æther is required to produce the same effect; for thirty or forty drops upon a handkerchief or sponge, and applied to the nostrils, are sufficient to produce the desired effect. 2, The action of chloroform is more rapid and complete, and more persistent than that of æther. 3, Frequently after taking the vapour of æther, sickness and headache come on; but, although these effects sometimes take place with chloroform, they are not so frequent. 4, The expense of chloroform is much less than that of æther, from the small quantity required.

The best mode of obtaining chloroform is to distil it from a mixture consisting of four pounds of chloride of lime in powder, twelve pounds of water, and twelve fluid ounces of rectified spirit. Both æther and chloroform act upon the system by suspending the functions of animal life, as sensation, consciousness, and volition. In this state the person is as it were in a profound sleep, and is entirely insensible to external phenomena, and incapable of movement. At the same time digestion, respiration, circulation, and all the other functions of organic or vegetative life, go on perfectly well.

In the administration of this agent care is required that its action is not carried to the extent of suspending the functions of organic life; but, as a rule, it may be stated, that so long as the pulse is natural, the extremities warm, and the respirations continue as usual, no harm can result from the use of chloroform. Amongst the thousands of cases in which this remedy has been administered, very few have occurred in which alarming or fatal symptoms have come on; and these have been brought on either by the peculiar constitution of the person, or the carelessness of those who have administered it.

Its applications are not confined to surgical operations; it is, at the present moment, extensively employed for diminishing the suffering attendant upon child-birth, and in many other cases. Its beneficial influence is not confined to relieving from pain, for it has been found that operations performed under its influence, as well as the cases of midwifery in which it has been exhibited, are much less fatal than those where this remedy has not been employed.

CHLORO-NITROUS GAS is of a pale reddish colour; its smell resembles but is rather weaker than that of chlorine; it emits fumes when exposed to the air, is absorbed by water, and possesses bleaching powers. It consists of equal volumes of chlorine and nitric oxide gases, combined without condensation.

CHLOROPAL occurs massive, amorphous. Colour green, sometimes reddish brown. Hardness 3.0 to 4.0. Opaque. Specific gravity 1.7 to 2.0. Found near Unghwar in Hungary. Silica, 46.0; oxide of iron, 33.3; magnesia, 2.0; alumina, 1.0; manganese, a trace; water, 18.0.

CHLOROPHÆITE, a mineral found in small masses imbedded in basalt or a black indurated ironstone. It is green when first broken, brittle, translucent, and has a specific gravity of 2.02.

CHLOROPHYLE, the colouring matter of leaves. When separated, and exposed to light or the action of chlorine, it is bleached. Acids produce a similar effect, and by the alkalies it is converted into soap. The red tint which leaves assume in autumn appears to be owing to the formation and action of an acid; the green colour is restored by an alkali.

CHLOROPHYLLITE (*Hydrous Iolite*) occurs crystallised in six-sided prisms. Hardness 2 to 5. Colour green or greenish brown. Specific gravity 2.705. Found in the neighbourhood of Abo, Finland. Silica, 45.05; alumina, 30.05; magnesia, 9.00; protoxide of iron, 5.30; water 10.60.

CHLOROSAMIDE (*Chlorosalicymide*). This compound is prepared by causing chloride of salicyle to absorb dry ammoniacal gas. The result is a yellow mass, which is insoluble in cold water, and decomposed by boiling water. It is soluble in boiling æther; and, as the solution cools, it separates in iridescent crystals of a yellow colour. It is soluble also in pure alcohol. It consists of C^{42} H^{16} N^2 O^6 Cl^3.

CHLOROVALERISIC ACID is obtained by passing dry chlorine in the dark through valerianic acid, and applying a little heat towards the latter end of the process. The result is hydrochloric acid and chlorovalerisic acid, which is a semifluid. It becomes quite fluid at 86°, and does not congeal at low temperatures. It is transparent, of an acrid and burning taste, without smell, and heavier than water, with which it forms a thin fluid hydrate that afterwards dissolves to a great extent. It is soluble in alkalies, but again precipitated by adding an acid. It is composed of C^{10} H^6 Cl^2 O^3 + HO. *Chlorovalerosic acid* is the ultimate product of the action of chlorine on the preceding substance, the operation being exposed to the sun. As to taste, smell, appearance, and other properties, it resembles chlorovalerisic acid. It contains C^{10} H^5 Cl^4 O^3 + HO.

Valerianic acid is produced by heating, out of contact of air, equal parts of quicklime and hydrate of potash, moistened either with alcohol, wood spirit, or potato oil (Amyle). The body thus obtained is identical with a volatile oily acid, distilled from the root of the *Valeriana officinalis*. Its density is 937, and it boils at 347°. The liquid acid contains C^{10} H^9 O^3 + HO.

CHOANITES, a group of Spengoid fossils from the chalk of England and France, thus named by Mantell. Analogous living forms occur on the coast of New Holland.

CHOCOLATE. [CACAO; THEOBROMA.]

CHOCTAWS. [NORTH-AMERICAN INDIANS.]

CHODOWIECKI, DANIEL, a distinguished miniature painter and etcher of the 18th century, was born at Danzig in 1726. He practised chiefly at Berlin. His etchings, amounting to at least 2000, were for the greater part executed for booksellers. Many of his designs are satirical, and he has been called the Hogarth of Berlin. All his works, though on a small scale, are remarkable for their expression, and the character is seldom exaggerated: his subjects are chiefly illustrative of common life or contemporary and recent history. Chodowiecki was director of the Royal Academy of Arts at Berlin, in which city he died in 1801.

CHŒROPOTAMUS, a fossil genus, instituted by Baron Cuvier on the examination of the jaws, whose general form and dimensions are analogous to those of the hog, and which would seem to belong to an animal nearly approaching the Peccaries, but larger. Teeth, six incisors and two canines in each jaw, and seven molars on each side. Example, *Chœropotamus gypsorum*. Found in the Paris gypsum.

CHOIR, that part of a cathedral, between the chancel and screen, in which divine service is

performed: it is separated from the nave by the screen, over which the organ is, in England and Ireland, commonly placed.

The *Choir* is also the term by which the lay-vicars, or lay-clerks, and choristers, *i.e.* the singers, of a cathedral, are collectively designated.

CHOISEUL, ETIENNE FRANÇOIS, DUC DE, born in 1719, was the ruling minister during a great part of the reign of Louis XIV. of France, from 1758 to the end of 1770, when he was dismissed from office, and exiled to his estate of Chanteloup, where he wrote his Memoirs and a satirical comedy against the royal family, styled 'Le Royaume d'Arlequinerie.' His Memoirs were published at Paris in 1790, after his death, which occurred in May 1785. The administration of the Duc de Choiseul was unfortunate. France lost Canada; her fleets, as well as those of Spain, were defeated; in the Seven Years' war she was unsuccessful against Frederic of Prussia; and she saw the crown of Poland placed on the head of Ponintowski. Another marked event of his ministry was the expulsion in 1760 of the Jesuits of France.

CHOISY-LE-ROI. [SEINE.]

CHOKE-DAMP. [CARBONIC ACID.]

CHOLERA, said to be from χολὴ and ῥέω, *bile-flux*. There are two diseases known by this name, one indigenous to and very frequent in Great Britain; the other an epidemic disease indigenous in Asia, but frequently spreading over other parts of the world. The former is called English or bilious cholera, the latter Asiatic or spasmodic cholera. It is of the first we shall now speak, the latter is treated of under the head of PESTILENCE.

The first symptom of bilious cholera commonly consists of griping pains of the bowels; these are soon followed by vomiting and purging: there is always a redundancy and an altered condition of the bile, and, in some cases, after the vomiting and purging have continued for some time, there supervene spasms in different parts of the body, but particularly in the upper and lower extremities, and more especially in the legs. The tongue is usually dry, the thirst urgent, and the urine scanty. The pulse, at first free and frequent, as the disease advances becomes smaller and weaker, and the strength is very rapidly reduced.

The chief exciting causes of this malady appear to be particularly connected with temperature. It rarely if ever attacks in the spring, at least in this country, while it is seldom altogether absent in the latter part of summer, and particularly when summer is passing into autumn. Hence its exciting cause would appear to be not so much a high temperature as an alternation of temperature from heat to cold; such an alternation constantly taking place at this season of the year, and occurring in fact every day, in the great difference that takes place between the temperature of the day and that of the night. Accordingly this disease is observed to be by far the most frequent and the most severe at the seasons when those alternations are the most remarkable; when, for example, cold easterly or northerly winds suddenly set in after hot weather; and, above all, when this cold is combined with a moist atmosphere, as during very warm summers and autumns occurring after a very rainy winter and spring, or after a succession of wet seasons, and when the days have been warm, bright, and sunny, and the nights cold with heavy dews. When such a concurrence of circumstances takes place in a high degree, the disease becomes so prevalent as to be as truly epidemic as any of the forms of fever common to the climate.

There is reason to believe that certain poisonous particles of matter, derived from decayed vegetable and animal substances, and diffused in the atmosphere, are among the most powerful exciting causes of cholera, as it is certain that they are of fever.

The presence of these miasmata as the cause of cholera should lead to the most prompt removal of all decomposing animal or vegetable matter from the dwelling-houses of human beings, and to the securing a perfect drainage for every house in villages and towns throughout the country.

The pathological state constituting the disease seems to consist of irritation of the mucous surface of the digestive tube, commencing in the duodenum and extending in each direction to the stomach, small intestines, and along the common duct to the gall-bladder and liver, with increased action of the muscular coats of these viscera and determination of the circulating fluid to them.

In regard to the treatment, Sydenham recommends in the early part of the attack the promotion of the discharge of the offending matter by means of diluents, such as weak broths and soups; and since his time this practice has been very generally followed. When the discharge has continued some time, opium is indispensable, which is best given in the form of pill, in doses of from one to three grains, repeated at short intervals. The muriate of morphia, in doses of from half a grain to two grains, is also an excellent remedy. In some cases the opium should be combined with calomel; and in the intense forms of this disease, common in warm climates, twenty grains of calomel combined with opium, repeated once or twice after an interval of from three to six hours, is found by experience to be the most effectual remedy.

CHOLESTRINE, the crystalline matter which constitutes the basis of most of the biliary concretions of man. It is inodorous and insipid. [CALCULUS.]

CHOLIAMBIC, the name of a kind of verse employed by Greek and occasionally by Latin writers. It consisted of six feet, and was regulated by the same general laws as the iambic verse of tragedy, but the fifth foot was properly and generally an iambus, though a few instances are found of a spondee in its place: the sixth foot was always a spondee or trochee. From this circumstance the name Choliambus is derived, which means lame iambus; the metre limps, as it were, in the sixth foot.

CHOLET. [MAINE-ET-LOIRE.]

CHOLULA, the *Churultecal* of Cortès, a town in Mexico, in the state of Puebla, is situated on

the table-land of Anahuac, at an elevation of 6912 feet above the sea. It is a considerable place, having a population of 16,000, but its manufacturing industry is limited to the fabrication of coarse cotton goods. Close to the town stands the largest of the Mexican *teocalli*, or pyramids. Its height is 177 feet, and the length of each side of its base is 1440 feet. The platform on its top has an area of somewhat more than 50,000 square feet, and in the centre of it there is a church dedicated to Nuestra Señora de los Remedios, in which mass is read every morning by a priest of the Indian race. At no great distance from it are two other teocalli, but of smaller dimensions.

CHOMA'TODUS, a genus of fossil fishes from the mountain limestone of Bristol and Armagh. (Agassiz.)

CHONAD. [HUNGARY.]

CHONDRI'TES, a fossil Fucoid from the green-sand, named *Fucoides Turgionii* by Mantell, is thus entitled by Sternberg. ('Flora der Vorwelt.') It is very widely disseminated in the green-sand deposits of Europe. *Fucoides intricatus* of Brongniart belongs also to the lower Cretaceous system in the Alps and Carpathians.

CHONDROPTERY'GII, or CARTILAGINEI, one of the two great sections into which the class *Pisces* is divided.

In this section we find species which possess, in most respects, the highest degree of organisation, while others possess the lowest observed in the class.

The principal character which distinguishes this section from the fishes with true bone (which usually come first in arrangements) is the cartilaginous substance of which the bones are composed, a circumstance arising from the very small quantity of earthy matter which enters into their composition. This earthy matter, when observed, is found to be disposed in small granules, and not in distinct fibres, as in the first section.

The cranium of these fishes is not divided by true sutures, but is formed of a single piece: the maxillary and intermaxillary bones are either wanting or rudimentary, and their functions are performed by bones analogous to the palatines, and sometimes the vomer. Many of the vertebræ are often consolidated. The gelatinous substance, which in most fishes fills the intervals between the vertebræ (these intervertebral masses being connected only by a small cord), in this section frequently forms a thick cord, which varies but slightly in diameter.

In the Myxine (*Gastrobranchus cœcus*) no distinct vertebræ are perceivable, their place being occupied by a soft gelatinous tube. In the extraordinary little fish described by Mr. Yarrell in his 'History of British Fishes,' the Lancelet (*Amphioxus lanceolatus*), this part is still more rudimentary, consisting only of a slender transparent column.

The Chondropterygii are divided by Cuvier into two orders—those which have their gills free, as in the generality of fishes; and those in which they are fixed, that is, the external edge attached to the skin. In the former of these orders, the species have but one external gill-opening, and in the latter they have several, generally five.

(For the families and genera into which this section of fishes is divided, see *Règne Animal*, vol. ii. p. 269, et seq.)

CHONDRUS. [SEA-WEEDS.]

CHONIKRITE occurs rounded in masses. Colour white, with shades of yellow and gray. Hardness between 2.0 and 4.0. Translucent, often only on the edges. Found at Elba. Analysis: Silica, 37.69; alumina, 17.12; magnesia, 22.50; lime, 12.23; protoxide of iron, 1.46; water, 9.00.

CHORA'GUS, the name of a public officer at Athens. Each phyle, or tribe, had a choragus, who was obliged to provide a chorus to perform at the representations in the theatre, and at many religious solemnities. Every expense of whatever kind attendant on the equipment of a chorus, either in the theatre or in any other exhibition, was discharged by the choragus. A tripod was the common prize of the successful choragus, who occasionally erected a small building on which he placed the prize. Such is the choragic monument of Lysicrates at Athens, commonly called the Lantern of Demosthenes. (*Elgin Marbles*, in *Library of Entertaining Knowledge*, ii. 76, 89, &c.)

CHORD (in Mathematics), a straight line drawn from one point to another of a curve. [ARC.] The term chord was also used in trigonometry, with sine, cosine, &c., to denote the chord of a circle, in which case it was also called the chord of the subtending angle. But this term, not being wanted, has not passed into pure algebra with sine, cosine, &c. [CIRCLE], so that, when used, it must be considered as retaining its primitive sense, namely, that of a straight line, not an abstract number expressing the ratio of a straight line to the radius. To find the chord of a given angle, multiply the diameter by the sine of half the angle. Thus the angle being 23° 20′, and its half 11° 40′, take the sine of the half, which is ·2022176. If the diameter be 100 feet, then the chord of 23° 20′ is 20·22176, or 20¼ feet nearly.

CHORD, in Music, is the harmonious combination of three or more musical sounds.

To account for the origin of chords many theories have been proposed, the principal whereof are that of Rameau, which D'Alembert endeavoured to elucidate and Marpurg partly built his system on, and those of Tartini and Kirnberger. These theories, in the main, all arise out of, or finally resolve into, the natural harmonics of a distended string. But it will be proper here to state that Sir John Herschel, in his admirable treatise on Sound, declares 'the insufficiency of any attempt to establish the whole theory of harmony and music on the aliquot subdivision of a musical string.' Nevertheless, the facts that result from the simple division of a stretched string agreeing with the natural harmonic divisions of a sonorous tube—the French horn, for instance—and which cannot be disputed, are sufficient to prove that the foundation of what is properly called harmony was not arbitrarily laid. These facts may thus be briefly stated:—the whole string gives the gravest, or generating sound;

four-fifths of the string give the major 3rd; two-thirds give the perfect 5th; and one-half gives the octave. Thus is produced the perfect or common chord, or triad, which, together with the chord of the seventh, is the source of all other real chords.

Musical composers have distinct names for many varieties of chords. Among them are the Perfect Chord, Perfect Minor Chord, Chord of the Seventh, of the Minor Seventh, of the Diminished Seventh, of the Dominant Ninth, of the Dominant Minor Ninth, of the Sharp Seventh, of the Thirteenth, of the Fifth and Second, of the Fifth and Fourth, of the Ninth and Fourth, &c. These are various modes of expressing the intervals between the three or four notes which form the chord, the fundamental or key note of the octave being taken as a standard of reference. There are also transpositions of many of these chords, in which one or two of the notes are raised an octave.

CHOREA (remotely from the Greek χορεία, and immediately from the Latin *chorea*, a dance with singing—Chorea Sancti Viti or Saint Vitus's Dance), a disease affecting with irregular movements the muscles of voluntary motion, these muscles being no longer under the command of the will, and the power both of walking and of using the arms and hands being impaired. The chief external manifestations of this disease are in the muscles of voluntary motion; but its real seat must be looked for in other organs. This disorder is frequently preceded by deranged appetite, which is sometimes voracious, and at other times altogether lost; by constipated bowels, and by imperfect digestion. There is also failure of the general physical strength, and a tendency to mental disorder. The mind is irritable and fretful, and oftentimes reserved, gloomy, and desirous of solitude. After this state of physical and mental disorder has continued some time, there come on irregular and involuntary twitchings of the muscles, particularly the muscles of the face, and these convulsive motions progressively increase, until the muscles of the extremities, face, lower jaw, head, and trunk, all become agitated with violent and irregular movements. In this case the patient is incapable of walking steadily, his gait is jumping or starting; sometimes he is altogether unable to walk, and seems palsied, while he is equally unable to perform the ordinary motions with the affected arm.

As the disease advances, the power of distinct articulation is lost: even the deglutition becomes difficult, in some cases to such a degree that fluids are forcibly thrown up from the pharynx in attempts at swallowing them; the eyes lose their lustre; the complexion becomes pallid and muddy; the expression of the countenance languid and vacant; and in the severest cases the mouth is variously twisted and the saliva drivels from it; the tongue is protruded irregularly and spasmodically; the eyes are distorted and rolled in various directions, and the sight is occasionally defective. The muscles meantime become soft and flaccid; emaciation takes place; the pulse is weak, but not much quickened; the urine is pale and copious, and the bowels are always constipated.

The mind is harassed by painful images and incongruous ideas, which every effort is made to conceal, and various desires and emotions are produced, sometimes without apparent cause. This disordered condition of the mind, when the disease is severe and long continued, ultimately terminates in a state of fatuity, of which the pallid, listless, and vacant countenance is the external sign and expression.

Chorea arises in widely different states of the system, and is produced by different causes, and therefore in different cases requires a different treatment. In many cases it arises from an accumulation of irritating matter in the alimentary canal, which must be removed by a course of purgative medicines. At the same time the strict regulation of the diet, both as to the quality and the quantity of the food, is indispensable. As this malady almost invariably occurs in an enfeebled state of the constitution, active exercise in fresh and pure air, and medicines of a tonic nature, more especially iron, should be also employed.

When this affection is connected, as it occasionally is, with organic disease of the spinal chord or brain, it is of the last importance to the proper treatment of the case that this organic lesion should be discriminated, and that the remedies proper to it should be promptly applied.

CHORLEY. [LANCASHIRE.]

CHORUS, among the Greeks, was a number of persons, male or female, who sang melodies accompanied with dancing. Originally the choral performance was a separate exhibition, and was of a religious character: hymns were chanted in honour of Dionysus and other gods. Afterwards an actor was added by Thespis, who first introduced the dialogue; other changes were made by his successors, especially Phrynichus, till a second actor was added by Æschylus, who embodied the chorus in the constitution of the Greek drama, as a part and only a part of the representation.

CHORUS, in Music, a composition sometimes in two or three, but generally in four parts, sung by many voices, accompanied by instruments. A *Double Chorus* is in eight vocal parts, sung by two choirs. The whole body of singers performing the chorus is also sometimes called 'the chorus.'

CHOSE IN ACTION is a technical term in the law of England which is applied to signify some demand or claim against a particular person or persons, which may be recovered by an action. It therefore applies to claims founded on contract, as well as to claims founded on delict or wrong. Money due upon a bond or a bill of exchange is a chose in action. In the case of bills of exchange and promissory notes, an indorsement transfers to the indorsee the right of action, and he can bring an action in his own name upon the bills or notes.

CHOSROES. [KHOSRU.]

CHOUANS was the name given to the irregular bands of royalists in the west of France, who continued in arms after the organised insurrection of La Vendée had been suppressed by the first consul, Bonaparte in the year 1800. The Chouans were chiefly on the right bank of the Loire, in the provinces of Bretagne, Maine, and Normandy,

while the Vendeans, properly so called, were on the left or south bank of that river. Frotté and Georges Cadoudal became the chief leaders of the Chouans, after the Vendeans had made their submission to the first consul. The Chouans were repressed in 1803, but Georges Cadoudal entered into a conspiracy at Paris against the life of the first consul, for which he was tried, and executed in June 1804.

CHOUGH. [CORVIDÆ.]

CHRISM, sometimes written CRISOME, in its strict interpretation means 'unction,' from the Greek χρίσμα (chrisma), ointment, but is more generally received as the name for oil consecrated by the bishop and used in the Romish and Greek churches in the administration of baptism, confirmation, ordination, and extreme unction. The word crisome is also found applied to the cloth which was laid over a child's face when baptized, to prevent the unguent from running off. Children likewise who die in the first month were called Crisomes in our Bills of Mortality, probably from the circumstance of the linen cloth having been so recently laid upon them.

CHRIST. [JESUS.]

CHRIST CHURCH, Oxford, is a college which was originally founded by Cardinal Wolsey in 1526, principally on the site of the Priory of St. Frideswide, and named Cardinal College. This foundation continued from 1525 to 1530, when Wolsey was deprived of his power and property, and for two years afterwards the foundation appears to have been interrupted, if not dissolved.

In 1532 the society was refounded by the king, under the title of 'King Henry VIII.'s College in Oxford,' and endowed with 2000*l.* yearly, for the maintenance of a dean and twelve canons, who should form a chapter, or body corporate. This second foundation continued until May 20, 1545, when the charter was surrendered by the dean and canons into the hands of the king, who then changed the college into a cathedral church, translating the episcopal see from Oseney, where it had been established in 1542. The name of the college was altered to 'The Cathedral Church of Christ in Oxford of King Henry VIII.'s Foundation;' and the society was declared to consist of a bishop with his archdeacon, and a dean and eight canons. All the estates were assigned to the dean and canons, on condition of their maintaining three public professors of divinity, Hebrew, and Greek, one hundred students in theology, arts, or philosophy, eight chaplains, and eight choristers. No change afterwards took place in the number or constitution of the society, except the addition of one studentship. The college is governed by the acts of the dean and chapter, revokable at their pleasure. There is no visitor but the king, or persons commissioned by him.

The benefactions to this college are few, and consist chiefly of the profits arising from tenements or sums of money bequeathed as exhibitions or for the better maintenance of poor students.

The buildings of this extensive establishment have undergone as many revolutions as its foundation. The church of St. Frideswide, which serves both for the cathedral and the college chapel, is at least of Norman, if not in some parts of earlier date. This church is in the shape of a cross, with a spiral steeple in the centre 144 feet high. The length from east to west is 154 feet. The cross aisle from north to south is 102 feet. The height of the nave is 41½ feet, of the choir 37½; and the breadth of the nave and side aisles is 54 feet. It has a cloister; and the chapter-house, built about the thirteenth century, is one of the finest specimens of the early style of pointed architecture in England. The hall is 115 feet by 40, and 50 in height. The great quadrangle is 264 feet by 261. Wolsey's quadrangle was surmounted by an open battlement with pinnacles, instead of the present Roman balustrade, which was added by Bishop Fell. The north side was finished after the restoration of King Charles II. The western gateway, with its tower, which was left unfinished by Wolsey, was completed by Sir Christopher Wren in 1682, when the bell was transferred to it commonly called Great Tom, which had formerly been the clock-bell at Oseney. The more modern buildings of this college are Peckwater and Canterbury quadrangles. The library, which forms the south side of Peckwater quadrangle, was commenced in 1716, but was not wholly finished till 1761. Canterbury quadrangle, adjoining that of Peckwater, stands on the site of what was formerly Canterbury Hall. King Henry VIII. transferred this hall with other buildings to the college, subsequent to which it was repaired and fitted up for the reception of students, and remained in that condition till 1773, when the old buildings were removed, and the square reconstructed upon a new design, chiefly through the munificence of Dr. Robinson, then Lord Rokeby, archbishop of Armagh, who gave more than 4000*l.* for that purpose. The Doric gateway was erected in 1778, by Mr. J. Wyatt.

In Jan. 1848 the members of convocation were 533, and the members on the books 957.

(Wood's *Annals of the University;* Chalmers' *History of the Colleges and Halls of Oxford;* Ingram's *Memorials of Oxford*, 4to., 1834; *Oxford Univ. Calendar*, 1848.)

CHRISTCHURCH. [HAMPSHIRE.]

CHRIST'S COLLEGE, Cambridge, was founded by Margaret, Countess of Richmond, mother of Henry VII., in 1505, on the site of a college founded by Henry VI., called God's House. Lady Margaret changed the name to that of Christ's College, made a munificent addition out of her own property to the former revenues, and incorporated the whole for the maintenance of a master, 12 fellows, and 47 scholars, to which Edward VI. added another fellow and three scholars. Sir John Finch and Sir Thomas Baines founded two more fellowships and two more scholarships, with revenues independent of the former endowment.

The foundation was for divinity, and the twelve senior fellows are obliged to take priest's orders within twelve months after they have reached the proper age. The other three fellowships may be held by laymen. The thirteen fellowships are open to all counties, but there must not be more than one fellow of any county at the same time.

The fifteen fellows are allowed to hold preferment with their fellowships to a limited amount. The fifty foundation scholarships are open to natives of all counties, but there must not be more than three scholars of the same county at the same time.

Besides the foundation scholarships, there are various other scholarships and exhibitions, which have been founded by private benefactors, in all about 44, and also four divinity studentships, which may be held till the degree of M.A. is taken.

Three gold medals are given annually, which are purchased with the interest accruing from funds invested by Bishop Porteus, and there are besides five or six annual prizes of books. There are 18 benefices in the gift of Christ's College.

The buildings of Christ's College form a neat quadrangular court 138 feet by 120 feet, opposite St. Andrew's Church; the buildings are faced with stone. There is also a more modern range of buildings which fronts the garden and fields. The chapel, including the ante-chapel, is 84 feet long, 27 feet wide, and 30 feet high.

(Dyer's *History of the University of Cambridge;* Lysons' *Cambridgeshire;* Wilson's *Memorabilia Cantabrigiæ; Cambridge University Calendar.*)

CHRIST'S HOSPITAL. [LONDON.]

CHRISTIAN KNOWLEDGE SOCIETY. [BIBLE SOCIETIES.]

CHRISTIANI'A, a name sometimes given, from Christiania, the capital, to the stift, or bishopric, and province of Aggerhuus in the south-east of the kingdom of Norway. It has an area of 30,707 square miles, and had, in 1845, 465,728 inhabitants. It is divided into 5 *amts*, or administrative divisions. [NORWAY.]

CHRISTIANI'A, the capital of the province of Christiania or Aggerhuus, and also of the kingdom of Norway, is in 59° 55′ N. lat., and 10° 50′ E. long., at the northern extremity of the Christiania Fjord, a bay extending about 70 miles inland, into which the river Agger falls close to the town. Except towards the bay, the town is inclosed by high hills and mountains, which on the north are about 5 miles distant, but on the other sides approach much nearer the town. The streets are straight, wide, and well paved. The houses have rarely more than two stories; but most of them are built of bricks, and a few of stone. Among the public edifices are the new palace; the military academy; the cathedral; the university, in connection with which there is a library of 100,000 volumes, an observatory, and a museum containing valuable collections of Norwegian fauna, antiquities, minerals, and coins; the theatre; the national bank; the army depôt; the freemason's hall; and the castle of Aggerhuus, which stands on an eminence at the southern end of the town, and commands the entrance to the harbour. The population of the city has increased rapidly since the separation of Norway from Denmark. Immediately after that event the population was only 10,000, in 1835 it was 21,757, and in 1845 it had increased to 30,931.

Christiania is the seat of a bishop, of the Swedish viceroy, and of the stift-amtmand of the province of Aggerhuus; here also the storthing, or Norwegian parliament, meets. The chief industrial fabrics are woollen cloth, ironware, tobacco, paper, leather, spirits, glass, &c. The exports are principally timber, deal planks, and iron. In the suburb of Opslo there are extensive alum-works. A short way from the town on the road to Trondhjem is a botanical garden very rich in arctic plants. The approach to Christiania by sea excites the admiration of all travellers, and perhaps no city in Europe has such delightful and picturesque environs. There is a regular steam-communication with Copenhagen, Kiel, and other ports of the Baltic; and also with Bergen, Trondhjem, and Hammerfest, near the North Cape. A railroad, in course of construction from Christiania to Lille-Hammer, at the northern end of the Lake Miosen, will render available the valuable forests in the neighbourhood of the latter place, which have been hitherto almost inaccessible.

(Von Buch's *Travels through Norway;* Murray's *Handbook for Northern Europe.*)

CHRISTIANITY, CHRISTIAN. The name of Christians was first given at Antioch (*Acts of the Apostles*, xi. 26) to the disciples of Paul and Barnabas.

Christianity is the name by which we designate the religion of all those whose faith is founded in Jesus. [JESUS.]

CHRISTIANSAND, a stift, or bishopric, and province of Norway lying N. of the Skager-Rack, W. of Aggerhuus, extending from the Naze (Lindesnaes) to about 60° N. lat., and covered almost entirely by the Norrska-fjellen Mountains and their offshoots. The western side of the province is indented by the Buckkefjord, a bay studded with numerous islands, and sending many inlets and narrow channels a long way inland between the bold projections that terminate the mountain ridges along the coast. The area of Christiansand is 17,725 square miles; the population in 1845 was 229,885. It is divided into four administrative divisions, called amts. [NORWAY.] The capital is Christiansand.

CHRISTIANSAND, the capital of the province of Christiansand, in the kingdom of Norway, is situated on the northern coast of the Skager-Rack, in 58° 10′ N. lat., and 7° 57′ E. long., and has 12,000 inhabitants. It stands on an extensive bay, where the Torridal enters the sea. The harbour, which is safe and well sheltered, is defended by a fortress on the small island of Odderö. The town has long broad streets laid out with the utmost regularity. The houses, though chiefly of wood, are very neat and pleasant, and separated from one another by gardens. The town is the residence of a bishop and of the stifts-amtmand, or governor of the province. It has a fine cathedral, a branch bank, and a grammar school. The principal branch of industry is ship-building, this place being situated in the only district of Norway where oak grows. It exports also logs and deals to England. On the coast lobsters are taken in great numbers, and shipped to the London markets. Christiansand was founded in 1641 by Christian IV. (Murray's *Handbook for Northern Europe.*)

CHRISTIANSTAD, a fortified town in south-

ern Sweden, in 56° 1′ N. lat., and 14° 5′ E. long., is the capital of the district called Christianstad-Län, and has 4200 inhabitants. The town is built on the Helge, which is crossed by a fine bridge. The streets are straight and wide, and the houses mostly built of wood. The harbour of the town is Ahus, a small place about 10 miles from it, at the mouth of the Helge.

CHRISTIERN II., of Denmark, born in 1481, was the son of King John, and grandson of Christiern I. He died Jan. 1559. He ascended the throne on his father's death *in 1513*. In 1520 he succeeded in having himself elected king of Sweden, and his reign is chiefly remarkable for the struggle of Sweden to regain her independence, for the events of which see GUSTAVUS VASA.

CHRISTINA (of Sweden), the daughter of Gustavus Adolphus by Maria Eleonora, Princess of Brandenburg, was born Dec. 8, 1626. Gustavus fell at Lützen, in November 1632. Christina was proclaimed queen by the states, and placed in the hands of five regents, or guardians, of whom the chief was the Chancellor Oxenstiern. They pursued the plan of education and discipline that had been traced out by the king himself. She was taught Latin, Greek, Hebrew, history, and politics; and for her amusements she was allowed to ride on horseback in masculine attire, to hunt, to shoot, and review troops.

In 1644 she took the reins of government into her own hands, and acted rather a conspicuous part in the affairs of Europe. She made peace with Denmark, obtaining the cession of some territory to Sweden; she pressed on the peace with Germany, against the advice of Oxenstiern and others; and finally became a party to the Treaty of Westphalia in 1648, by which she obtained three votes in the diet of the Germanic Empire, and the cession of Pomerania, Wismar, Bremen, and Verden.

When pressed by the states to marry, she constantly and firmly refused; but in 1649 she named her cousin Gustavus as her successor, though soon after having done so, she had herself crowned with great pomp under the title of *king*.

Having now no wars to engage her attention, she gave herself up with all the energy of her character to arts and literature, or rather to a mania of patronising artists and men of letters. Her court was soon crowded, good being mixed with the bad; among the most celebrated were Vossius, Heinsius, and Descartes.

The intercourse of Christina with these foreigners, many of whom were suspected of infidelity, a growing dislike to the influence of the Lutheran Church in the government of the country, and perhaps a desire for notoriety, first induced her to abandon her original creed; and then the management of a Jesuit named Maredo, the confessor of the Portuguese ambassador, induced her to become a secret convert to the Roman Catholic religion. Knowing this faith to be irreconcilable with the possession of the Swedish crown, which became to her every day a heavier burden, she finally resolved on renouncing the crown in 1654; and on the 16th of June her abdication took place with great solemnity. A few days after this public act she set off for Brussels, where she privately abjured the Protestant religion. She afterwards went to Rome, into which she made a sort of triumphal entry, and during her stay behaved with great eccentricity, quarrelled with the court, and in 1656 removed to Paris. While there, her intrigues gave offence to Cardinal Mazarin, and she removed for a short time, but returned in the following year. She then had apartments assigned her in the royal palace at Fontainbleau, and here she had sentence of death passed on her master of the horse, Monaldeschi, which sentence was carried into effect by Sentinelli, one of her bodyguard. The court was offended, but took no public notice of this atrocious act, which Christina justified, by stating that by her deed of abdication she had reserved to herself supreme power over her own suite, that she was still a queen wherever she went, and that Monaldeschi was guilty of high treason.

Finding herself uncomfortable in France, the queen again went to Rome, where, with the exception of a short visit to Stockholm in 1660, on the death of Charles Gustavus, and one or two short visits elsewhere, she resided during the remaining twenty-eight years of her life. Through that long period her occupations were various. She took part in numerous political intrigues; she engaged actively in the Molinist or Quietist controversy; she indulged in the dreams of alchemy and judicial astrology; she violently censured Louis XIV. for his revocation of the Edict of Nantes and *dragonades* against the Protestants of France; she founded an *accademia*, or literary society; she corresponded with many *savans*, and she made a large collection of objects of art and antiquity. She died at Rome, with great composure, on April 19, 1689. Though she wrote continually, not much of her writing has been preserved. Her 'Maxims and Sentences,' and 'Reflections on the Life and Actions of Alexander the Great,' were collected and published by Archenholtz, in his Memoirs of her Life, 4 vols. 4to., 1751.

(Archenholtz; Catteau-Calville's *Histoire de Cristine, Reine de la Suède.*)

CHRISTMAS, the festival in memory of Christ's nativity, the day of which is observed on the 25th of December. The learned have been divided upon the precise day of the Nativity; but the 25th of December has been the day most generally fixed upon from the earliest ages of the church. For the customs formerly prevalent before, at, and about Christmas, see Brand's 'Popular Antiquities,' of which an edition has recently been published in 3 vols. post 8vo.

CHRISTMAS ROSE. [HELLEBORUS.]

CHRISTOPHE, HENRY, was born of negro parents, about 1767 or 1768. The place of his birth is uncertain. In 1790, on the insurrection of the blacks in the French part of St. Domingo, he joined the insurgents, displayed much energy and courage, and attained high military rank. Toussaint Louverture, the generalissimo of the blacks, employed him to put down several insurrections which troubled the dawn of negro

freedom. In 1802, when General Leclerc, the brother-in-law of Napoleon Bonaparte, conducted a strong expedition from France to regain St. Domingo from the blacks, Christophe boldly defended Cape Town. When Toussaint was treacherously seized and transported to Europe, Christophe and Dessalines succeeded in expelling the French forces in 1805. In 1806 Christophe joined Pethion against Dessalines, who was murdered, and Christophe was declared president of the republic of Hayti, and Pethion governor of the southern provinces. The two leaders quarrelled; Pethion, a mulatto, remained head of a republic at Port-au-Prince, and Christophe, in 1811, became hereditary king of Hayti. He then organised a court of dukes, counts, and barons, and issued a code of laws, encouraged education and printing, and in fact imitated as far as was possible the proceedings of Napoleon. On the death of Pethion however in 1818, Christophe endeavoured to get possession of that division of the island by force, but he was repulsed with great loss by the new president Boyer. This failure, and discontents at home, occasioned an insurrection, of which the object was to suppress the monarchy. Seeing himself in danger of being made prisoner, he shot himself, Oct. 8, 1820.

CHRISTOPHER, Duke of Würtemberg. [Würtemberg.]

CHRISTOPHER'S, ST. [Antilles; West Indies.]

CHROMATIC. [Lens.]

CHROMATIC SCALE. [Scale.]

CHROMATIC THERMOMETER is the name given by Sir David Brewster to an instrument consisting of several rectangular plates of glass placed with their surfaces in contact, and intended to measure the difference between the temperature of the glass and of any body, solid or fluid, which may be applied to it. The temperature induced in the glass must however be below that at which the glass would become red-hot.

The plates should be close together, in order to prevent any reflection of light between them, and the upper edges of all should accurately fit the surface of a plate of metal which may constitute the base of a vessel intended to contain a heated fluid, when the temperature of a fluid is to be found.

The heated body, solid or fluid, being in contact with the edges of the glass plates, the inequality of strain caused by differences of temperature in the parts of each plate of glass gives rise to a polarising action, by which, when the plates are held in a beam of light polarised by reflection from the surface of glass or any other transparent body, the following phenomena take place:—A wave of white light appears first at the heated edge of each plate, and advances gradually from thence, sending before it an ill-defined dark band: nearly at the same instant a similar white wave, driving before it a dark band, advances from the opposite edge of the plate towards the former, and a white band or spot appears in the centre of the glass advancing towards both the heated and the opposite edge, compressing the dark bands so as to reduce them to two black fringes. To the white waves both at the edges and centre succeed fringes of yellow, red, purple, blue, &c., all parallel to the heated edge; and, at the same time, the like fringes form themselves on the sides perpendicular to that edge. The maximum of tint produced at the centre of the plate is considered as a measure of the temperature acquired by the glass.

Comprising the tints produced by the application of given temperatures with those of Newton's scale [Colours of Plates], Sir D. Brewster formed a scale from which the indications afforded by the instrument could be converted into the corresponding temperatures expressed in degrees of Fahrenheit's scale.

Since the eye may not be able to distinguish accurately the tints produced by the applied heat, Sir D. Brewster proposed to measure them by means of a piece of coloured crystal, two inches long, cut in the form of a wedge, so that the tints might become gradually deeper from the edge to the thick end; this being placed before the plate of glass, and moved till a situation is found where the waves or fringes on the latter exhibit two dark lines crossing each other, at that place the tints of the wedge and that of the glass plate are equal to one another, and, the former being given, the latter is consequently obtained.

CHROMIC ACID. [Chromium.]

CHROMIUM, a metal discovered by Vauquelin in the year 1797. He found it in a rare Siberian mineral, which contained lead, and was called, from its colour, *red lead*, but which is now known as *chromate of lead*.

Chromium is pulverulent, of a yellowish white colour, and metallic lustre. Its specific gravity is generally stated at 5.9, but according to Dr. Thomson it is but little above 5. The appearance of the metal varies however according to the circumstances under which it is reduced. Thus Liebig obtained it as a black powder, by acting upon one of its chlorides with ammonia; from another chloride and ammoniacal gas it was obtained of a chocolate brown colour, and so finely divided, that when heated in the air it burnt. It suffers but little change by exposure to the air; it conducts electricity. Acids act upon it but slightly. Its atomic number is about 28.

The principal ores which contain chromium are —*chromate of lead, subsesquichromate of lead, chromate of lead and copper*, and *chromate of iron*. All these four kinds occur both crystallised and uncrystallised.

Chromium combines with many of the elementary substances. *Oxygen* and *chromium* form chromic acid (O^3 $Chro^1$), in red deliquescent crystals: it destroys vegetable colouring matter, and combines with bases to form *chromates*. Another combination of oxygen and chromium forms the sesquioxide (O^3 $Chro^2$); it has a green colour, and is the colouring matter of the emerald; it is employed to give a green colour to glass and porcelain; it is soluble in acids, but not in water; it is unchanged by heat or by alkalies. *Chlorine* and *chromium* combine to form a sesquichloride; it has a reddish colour, and sublimes in scales when gently heated in a close vessel; it is readily

soluble in water, and forms a green sweet-tasted solution. This compound of chlorine and chromium consists of $Chlo^3\ Chro^2$; but there is another, the terchloride, consisting of $Chlo^3\ Chro^1$; it is a fine red-coloured liquid. *Fluorine* and *chromium* form a sesquifluoride ($F^3\ Chro^2$), a greenish powder, soluble in water; they also form a terfluoride ($F^3\ Chro^1$), a red-coloured gas, which acts rapidly on glass. *Sulphur* and *chromium* form a sesquisulphuret ($S^3\ Chro^2$); it is of a dark gray colour, unctuous to the touch, and inflammable when heated in the air. *Phosphorus* and *chromium* form a phosphuret ($P^1\ Chro^1$), a black substance, slightly acted upon by some of the acids.

The *salts of chromium* are next to be noticed. There is perhaps no metallic substance which more perfectly acts as an acid to bases and as a base to acids than this metal, the difference depending, of course, upon its degree of oxidisement, that is, whether it be an acid or an oxide. The compounds of the chromic acid and bases will first be mentioned, or the chromates.

Chromate of potash (Chromic acid[1], Potash[1]) is in yellow crystals, of the right rhombic prismatic form; it has a bitter taste; it is soluble in water, insoluble in alcohol, and unalterable in the air. *Bichromate of potash* (Chromic acid[2] Potash) is a doubly oblique prismatic crystal; it has a penetrating and bitter taste; it is soluble in water, unalterable by exposure to air or moderate heat, but easily decomposed by many chemical agents. *Chromate* and *bichromate of soda* are very analogous to those of potash; the first is yellow, and the second red. *Chromate of lime* is in soluble silky plates. *Chromate of magnesia* forms yellow crystals; the *bichromate* is red. *Chromate of barytes* is a yellow solid, insoluble in water, but decomposed by sulphuric acid. *Bichromate of chromium* is an uncrystallised solid, soluble in water and in alcohol. *Bichromate of iron* is a liquid, which is formed of Chromic acid[2], and Peroxide of iron[1]. *Chromate of manganese* is a brown liquid, having a sharp metallic taste. *Chromate of lead* is a fine yellow substance, insoluble in water, but mixible with oil; it is extensively employed as a pigment, and in calico printing. *Bichromate of lead* (Chromic acid[1], Oxide of lead[2]) is a fine scarlet substance, insoluble in water.

These are the most important chromates. The salts which contain oxide of chromium as a base are but little employed. We shall mention only the most distinctly marked of them. *Nitrate of chromium* is a reddish substance, readily soluble in water. *Sulphate of chromium* is a dark-coloured tasteless substance, not readily soluble in water, nor altered by exposure to air. The *Arseniate*, *Carbonate*, and *Phosphate* of chromium are all insoluble compounds.

CHROMULE. [SAP.]

CHRONICLE, CHRO'NICON (from χρόνος, time), denotes a history in which facts are digested in order of time, though not necessarily in successive years. The term Chronicle, at the present day, is seldom used but in speaking of our old histories, as the 'Saxon Chronicle;' 'Caxton's Chronicle;' 'Fabyan's Chronicle;' 'Holinshed's Chronicle.'

CHRONICLES, the name of two books of the Old Testament. In the original Hebrew they constitute only one book, entitled 'Dibrè Hayyamim,' which signifies 'Words of Days,' that is, diaries or journals. In the Septuagint they are called Παραλειπόμενα, 'things omitted.' The name Chronicles seems to have been first applied by St. Jerome, who is followed by Du Pin, Bishop Patrick, and most modern commentators, in supposing that Ezra, otherwise Esdras, was the compiler of these books. The chief design of this compilation seems to have been to exhibit, first, the genealogies, ranks, and functions of the priesthood, in order that, after returning from the Captivity, they might reassume their proper dignities; and secondly, by describing the distribution of lands before the Captivity, to direct the families of each tribe in regaining their ancient inheritances. The first book is a recapitulation of sacred history from the creation to the death of David. The second book gives the history of the kings of Israel and Judah from Solomon to the return from Babylon; but the history of the kings of Judah is given more fully than in the Book of Kings, and that of the kings of Israel more succinctly.

CHRONOLOGY (χρονολογία), a Greek word, literally signifying 'time-reckoning.' Chronology regards events simply according to the order of time; but the succession of events in the order of time makes a very important part of their exposition in the relation of cause and effect. A history cannot be written in an intelligible manner without respect to chronology.

The order of a history will often differ from that of a purely chronological arrangement. In history each connected series of events is related separately, and thus forms a unity, in which the progress and development of certain principles, causes, or given conditions of society, are exhibited. In chronology, events of various naturally distinct series are intermixed, nothing being attended to except the order of time in which they happened. Thus a mere chronological table, or chronicle, of the events of the last century would enumerate, under no arrangement except the order of time, the events which had taken place during that period in all the countries of the world.

Dionysius of Halicarnassus observes, that while Thucydides has divided his history of the Peloponnesian War into many parts, Herodotus, having in his history embraced many different subjects, has formed them into a single whole, of which the several parts perfectly correspond. The history of Herodotus is in the form of an epic poem, of which the main subject is the wars of the Greeks and Persians. The digressions, which correspond to the episodes of an epic poem, and, as in the case of that of Egypt, take up an entire book, render it very difficult for a young student to form an idea of the history as a whole. But, if the episodes are cut out, the whole history exhibits the main subject in regular order.

But, although both Herodotus and Thucydides have so far adhered to a chronological arrangement as to relate the events in the order of time in which they happened, neither of them attended to chro-

nology in any scientific sense. They were both prevented from doing this by the want of any fixed epoch or starting point from which to reckon. Thucydides, in recording the events of the Peloponnesian War, keeps to the order of the years; and he fixes the date of the commencement of the war (ii. 2), by referring to the truce made after the capture of Eubœa, to the priesthood of Chrysis in Argos, to the ephorship of Ainesias at Sparta, and the archonship of Pythodórus at Athens. In speaking of events that happened long before the war (i. 13, 19), he refers to the end of the Peloponnesian War as the point from which to reckon backwards.

The determination of the length of the year and the regulation of the calendar appear to have occupied the attention of the ancients before they thought of dating events from a fixed epoch. The first æra, or computation of time from an epoch, made use of among the Greeks, was that of the olympiads. The date of the original institution of the Olympic Games is placed in very remote antiquity; but it was a long time, even after their revival by King Iphitus (B.C. 884), before they came to be used for the purpose of fixing historical events. Timæus of Sicily, who lived in the reign of Ptolemæus Philadelphus (B.C. 283-245), was the first who attempted to establish an æra, by comparing and correcting the dates of the olympiads, the Spartan kings, the archons of Athens, and the priestesses of Juno. Eratósthenes (B.C. 194), the father of chronology, and Apollodórus (B.C. 115) digested the events recorded by them, according to the olympiads and the succession of Spartan kings. When the olympiads were adopted as an æra, the reckoning commenced from the games at which Coræbus was the victor, being the first at which the name of the victor was recorded. This date is placed 108 years after the restoration of the games by Iphitus, and is calculated to correspond with the year B.C. 776.

Eratosthenes, the astronomer, seems to have endeavoured to establish a system of chronology by ascertaining the dates of certain ancient events, which might serve as fixed points from which to reckon all other events. The dates which he affixed to the principal events of antiquity are given from Clemens Alexandrinus, in Clinton ('Fast. Hel.,' i. 124). Those of Apollodórus, who made some corrections on the system of Eratosthenes, are given in Clinton, p. 125, as preserved by Eusebius. Clinton has shown that the leading dates of Eratosthenes and Apollodorus were adopted generally by subsequent chronologers, both Greek and Latin. Among the Romans the most eminent authority in chronology was Varro, who lived in the century immediately preceding our æra; but of his numerous and learned works very little remains.

The establishment of the first olympiad as a common epoch may be said to have given birth to chronology as a science, by introducing into historical writing the general practice of dating events with reference either to that or to some other fixed point. The principal business of chronologers after this was to determine the relationship of each of these epochs to every other.

The common æra of the Roman historians commences from the foundation of the city of Rome; but there was a great variety of opinion among the ancients respecting the date of this event. The Romans themselves for the most part followed either the computation of Cato, which places it in B.C. 752, or that of Varro, which assigns it to B.C. 753. This practice of dating events from the building of Rome may be regarded as the first adoption of the simple method of reckoning from a fixed point by single years, and as forming therefore one of the great stages of chronology.

Another usual mode of reckoning among the Latin historians was by the annual consulships. Often both the year of the city and the names of the consuls are given.

The method of reckoning from the first olympiad was occasionally employed long after the birth of Christ. But from A.D. 312 the regular public mode of computation throughout the Roman Empire, both west and east, was by the indictions, which were cycles or periods of fifteen years, beginning with that year. The method of dating events from the birth of Christ is said to have been first practised by a Roman monk named Dionysius the Little about the year 527. The method of reckoning from this epoch, being now universally adopted throughout Christendom, has furnished a chronological measure of much more extensive application than any other which had preceded it. It is generally held that the birth of Christ took place about four years earlier than the date assigned to the event by Dionysius; but this mistake of the inventor of the vulgar æra does not affect its value as a scheme of chronological notation. It is quite unimportant which the point is from which we reckon, if it be a determinate point.

There is one inconvenience attending the choice of an event for reckoning from so recent as the birth of Christ, namely, that it necessarily introduces two modes of reckoning, and leaves the events of a large, in fact of the largest, portion of history to be dated backwards, or according to the distance of each behind the assumed epoch. To provide a more comprehensive mode of reckoning, Joseph Scaliger, in 1582, invented what he called (after Julius Cæsar) the Julian period, being a cycle of 7980 years, which is the product of the continued multiplication of 28, the number of the solar cycle, 19 that of the lunar, and 15 that of the indiction. The advantage of this construction of the period is, that the place of any of its years in any one of these cycles is at once found by a simple process of division. It is found that the first year of the Christian æra must, according to its position in these three cycles, have been the 4714th of the Julian period. We have therefore, in this period, a chronological measure which may be applied, if necessary, over all that time before the birth of Christ.

If the date of man's appearance on the earth could be established, that would form the most convenient point from which to commence the reckoning of time and to date the events of history. None of the ancient chronologers attempted

to fix this point. Even among the Jews and Christians, whose sacred writings begin their record of events from the creation, there has been the greatest diversity of opinion as to that epoch. Kennedy, in his 'Scripture Chronology,' affirms that 300 different opinions might be collected as to the length of time that elapsed between the creation and the incarnation.

From the creation to the deluge the computation of the Hebrew text of the Old Testament makes 1656 years to have elapsed; the Samaritan version only 1307; and the Septuagint 2262. The common opinion of modern theologians, and also of chronologers, has been that the Hebrew text is correct; and it is upon this assumption that Archbishop Usher, whose reckoning has been most generally adopted, has fixed the distance between the creation and the birth of Christ at 4004 years.

Astronomy has done great service to chronology, by the means which it affords of ascertaining the exact date of many eclipses of the sun and moon which are recorded by ancient writers, and are sometimes connected by them with historical events that happened at or near the same time. In the first volume of the great French work, 'L'Art de Vérifier les Dates' (pp. 146-265) are given lists first of all the eclipses of the sun and moon which could have been seen to the north of the equator for ten centuries preceding the birth of Christ; and, secondly, of all those recorded before that epoch by ancient writers. In a subsequent volume of the same work there is a list of the visible eclipses that have happened since the commencement of the vulgar æra. Lists of eclipses, solar and lunar, are also given in Playfair's 'Chronology,' pp. 175-219. As an example of the astronomical examination of a recorded ancient eclipse, see the article ALYATTES.

One of the earliest of the Christian systematic chronologers is Sextus Julius Africanus, who appears to have flourished in the first half of the third century. [AFRICANUS.] The most important of the works of the early Christian chronologers which we now possess is the Chronicon of Eusebius Pamphili, bishop of Cæsarea, in the fourth century. The work which laid the foundation of the modern science of chronology is that of Joseph Scaliger, 'De Emendatione Temporum,' first published in folio at Paris in 1583, and afterwards much augmented and amended, at Leyden, in 1598, and at Geneva in 1629. Another important work of that age is that of Dionysius Petavius, or Petau, 'De Doctrinâ Temporum,' two vols. folio, Paris, 1627, with the Continuation in one vol. folio, Paris, 1630, entitled 'Uranologion, sive Systema variorum Auctorum qui de Sphæra ac Sideribus, &c., commentati sunt.' The work of the Benedictine monks, Maur d'Antine, Durand, and Clemencé, first published in 1 vol. 4to. at Paris, in 1750, has, in the latest edition, extending to 38 volumes 8vo., published at Paris, 1818-1831, become the most extensive and important work on general chronology that exists. The principal works by English authors are the 'Chronicus Canon Ægyptiacus, Ebraicus, et Græcus,' of Sir John Marsham, fol., London, 1672, and also Leipzig, 1676, and Frankfort, 1696; Archbishop Usher's 'Annales Utriusque Testamenti,' fol., London, 1650, and several times reprinted; Sir Isaac Newton's work on Chronology; Jackson's 'Chronological Antiquities,' 3 vols. 4to., 1752; Blair's 'Chronology and History of the World, from the Creation,' fol. 1754, and again, 1768, with additions; Kennedy's 'Complete System of Astronomical Chronology, unfolding the Scriptures,' 4to., 1762; Playfair's 'System of Chronology,' fol., Edin., 1784; and the Rev. Dr. William Hales's 'New Analysis of Chronology, in which an Attempt is made to explain the History and Antiquities of the Primitive Nations of the World, and the Prophecies relating to them,' 3 vols. 4to., 1800-1812. But so far as the Greek chronology is concerned, and a portion of the Roman chronology, the most comprehensive, elaborate, and valuable work that has appeared is that of Mr. H. F. Clinton, entitled 'Fasti Hellenici: the Civil and Literary Chronology of Greece, from the earliest Accounts to the Death of Augustus,' now completed in three volumes 4to., of which the first, comprising the Chronology from the earliest accounts to the time of Pisistratus, was published at Oxford in 1834; the second, comprising the period from Pisistratus to Ptolemæus Philadelphus, in 1824; and the third, completing the review to the end of the reign of Augustus, in 1830.

The chronological tables are too many to be enumerated. Several of the systematic works on chronology that have been mentioned contain collections of such tables. The only other work which we shall mention is a useful work in one small volume, by Sir Harris Nicolas, entitled 'The Chronology of History' (1833), forming the 44th volume of Dr. Lardner's 'Cabinet Cyclopædia.' [ÆRA; CYCLE; PERIODS OF REVOLUTION; YEAR.]

CHRONÓMETER, a name applied to such time-keepers as are used for determining the longitude at sea, or for other purposes where great accuracy is required, combined with portability. Some are made for the pocket, resemble ordinary watches in appearance, and, like them, are made to go thirty hours with once winding up. Marine chronometers are usually larger, with dial-plates three or four inches in diameter, and made to go from two to eight, or, by some recent improvements, even as many as thirty-two days with once winding up. They indicate hours (from I. to XXIV., to avoid the possibility of an error of twelve hours), minutes, and seconds, often on separate circles; and they are furnished with a small hand to indicate the days which have elapsed since winding up. The mechanism is inclosed in a brass box, mounted on gimbals, so as to preserve one uniform position, and inclosed in a mahogany case.

The greater part of the mechanism of a chronometer resembles that of a common watch, but is constructed with every possible provision to ensure accuracy. This being treated under HOROLOGY, we have only to notice the more prominent of the distinctive features of a chronometer. These are the *detached escapement* and the *compensation-balance*. The former is a contrivance by which

the balance, the vibrations of which constitute the actual measure of time, is, during the greater part of its movement, entirely detached from, and consequently unaffected by, the train of wheel-work from which its impulse is derived; the wheels, in fact, standing still through the greater part of each vibration. The compensation-balance is a beautiful contrivance for counteracting the effect of changes of temperature, which, by causing an ordinary balance to expand and contract, occasion a variation in the extent of its vibration, and consequently in the rate of going of the time-piece of which it forms the essential feature. This correction, in the ordinary compensation-balance, is effected by forming the rim of the balance of two semicircular slips of metal, fixed at one end only, and each consisting of a very narrow riband of steel joined to an outer rim of brass. Each of these semicircular slips, consisting thus of two metals differently affected by heat, is capable of altering its shape with every change in the temperature to which the chronometer is exposed, in such a way as to keep the vibrations of the balance always the same. In the first marine chronometers, constructed by Harrison [HARRISON], of the history of which a full account appeared in the 'Companion to the Almanac' for 1842, this object was attained by applying such a compensating apparatus to the balance-spring. Arnold, following, probably unconsciously, in the track of the great French watch-maker, Le Roy, applied it to the balance itself. Many other improvements have been made in the chronometer, rendering it almost as perfect as any thing from the hand of man can be expected to be; and of late years very ingenious contrivances have been devised by Messrs. Dent, Eiffe, and Molyneux, for correcting certain irregularities of action in the ordinary compensation-balance and producing a balance surpassing it in accuracy of movement as it surpasses the balance of a common watch.

CHRONOMETER, in Music, an instrument by which the movement of time (*i.e.* the quickness or slowness) of a composition is determined. A modern form of such an instrument is noticed under METRONOME.

CHRUDIM. [BOHEMIA.]

CHRY'SALIS. [PUPA.]

CHRYSA'NTHEMUM, a name applied to a genus of composite flowers, most of which are wild in different parts of Europe, and of little general interest; it is however popularly known from its also comprehending the Chrysanthemum Sinense, a Chinese half-shrubby plant, whose numerous varieties constitute one of the chief ornaments of gardens in the months of October, November, and December. The flower-heads consist exclusively of ligulate florets of almost every colour except blue. Pure white, bright yellow, deep and pale red, rich purple, and a dark morone brown, occur in different varieties, and together contribute to the beauty for which the species is so much admired. They all strike root with great facility by cuttings, which should be taken from the parent plant at midsummer, and planted in a cool frame under a bell-glass.

CHRYSEN, a substance obtained by Laurent from pitch or gas tar by repeated distillation. The products which come over last consist of a soft reddish or yellow mass, and of a thick oil, in which crystalline plates are visible. That which condenses in the neck of the retort consists principally of Chrysen, so called from its golden colour, while the receiver contains pyren. [PYREN.] Chrysen is yellow, crystalline, inodorous, and tasteless. It is insoluble in water or alcohol, and not very soluble in æther. Warm concentrated sulphuric acid dissolves it, and it assumes a beautiful green colour. Nitric acid, chlorine, and bromine, all decompose it. It melts at about 450° Fahrenheit, and at a higher temperature volatilises, with partial decomposition. Its composition is C^3 H'.

CHRYSI'DIDÆ, a family of hymenopterous insects of the section *Pupivora*. The insects of this family are most of them, if not all, of parasitic habits; they seek the nests of other insects, where they deposit their eggs, to the destruction of the rightful owners, each species apparently confining its attacks to the nest of some other hymenopterous insect; and, what is more, each species seems to have its own specific prey. The principal genera are—*Panorpes, Chrysis, Stilbum, Hedierum, Elampus*, and *Cleptes*. For the mode in which the larvæ of *Panorpes carnea* prey upon those of the Bembex, see BEMBEX.

CHRYSIPPUS, son of Apollonius, was born at Soli in Cilicia, B.C. 280. He went to Athens, and attended the instruction of Cleanthes, whom he succeeded. Chrysippus was a skilful dialectician. He is said by Diogenes to have written upwards of 705 volumes, that is, treatises, many on the same subject. After Zeno he was considered the main prop of the Porch. Chrysippus appears to have held substantially all the main doctrines of the Stoic theology, though in some minute particulars he is said to have differed from Zeno and Cleanthes. He died at the age of 73, B.C. 207. (Diogenes Laertius, book vii., *Life of Chrysippus;* Fabricius, *Bibliotheca Græca*, vol. ii. pp. 392, 393.)

CHRYSOBALANA'CEÆ, a natural order of polypetalous exogens, allied to Rosaceæ and Fabaceæ. The species are trees, or shrubs, and are exclusively natives of the tropics, where they often bear the name of plums.

CHRYSOBERYL, a crystallised mineral, generally of a green colour, translucent, and having a vitreous lustre and conchoidal fracture. Specific gravity, 3.8. Hardness, 8.5. It consists of—Alumina, 77.0; gucina, 17.5; protoxide of iron, 5.0; other matters, 0.5. A few specimens are met with uncrystallised.

CHRYSOCHLO'RA, a genus of dipterous insects of the family *Stratiomydes*. Of this genus only three species are described: they are all of large size; one inhabits the Isle of France and the East Indies; the two other species belong to South America. Their colour is black and yellow.

CHRYSOCHLO'RIS (Lacépède), a genus of burrowing Insectivora, representing in Africa the mole of Europe. The fore paws, though mole-like, are armed only with three nails, of which the outermost is thick, arched, and pointed. There

is no tail. Eyes appear to be entirely wanting, or merely rudimentary beneath the skin. The Cape Chrysochlore (*Ch. Capensis*) has a velvety fur, of a metallic lustre, changing from dark green to bronze and copper in different lights. It is a native of South Africa, where it lives, like the mole, in burrows, and feeds on worms and insects. It is the *Taupe dorée* of the French. A second species, the Rufous Chrysochlore (*Ch. Hottentota*), has been discovered by Dr. A. Smith. With respect to the *Taupe rongeur* of Seba, from South America, considered as identical with the *Tucan* of Fernandez, it is evident that it was a burrowing Rodent, probably the Tucotuco of Darwin (*Ctenomys Braziliensis*). (*Zoology of the Voyage of H.M. Ship Beagle*, No. iv. of Part 2, p. 79.)

CHRYSOCOLLA occurs massive. Colour blueish and blackish green. Hardness, 2.0 to 3.0. Translucent. Specific gravity, 20.31. Found in Cornwall, in the Bannat, Tyrol, Hungary, &c., &c. Analysis: silica, 36.54; oxide of copper, 40.00; water, 20.20; iron, 1.00.

CHRYSO'COMA, a genus of plants belonging to the natural order *Compositæ*. The only British species of this genus is the *C. linosyris*. It has yellow flowers, and is found on limestone cliffs, but is a rare plant.

CHRY'SODON, a name unwarrantably given by Oken to the genus *Amphitrite* of Cuvier. (*Règne Animal*, vol. iii. p. 194, note 3.)

CHRYSOGASTER, a genus of dipterous insects of the family *Syrphidæ*. About fourteen species have been discovered in England. They are of moderate size, and their colouring is metallic.

CHRYSOLITE occurs crystallised and massive. Primary form, a right rhombic prism. Colour, green, brownish, or yellowish. Transparent and double-refracting. Specific gravity, 3.4. Hardness, 7. It consists of—silica, 38.0; magnesia, 50.0; protoxide of iron, 10; other matters, 2.0. One variety is called *Olivine*, from its colour.

CHRYSO'LORAS, EMMANUEL, a learned Byzantine, was sent to Italy about 1397 by the Emperor Manuel Palæologus, to request the assistance of the Venetians and the pope, and the other Christian princes, against the Turks. Having fulfilled his mission, he settled at Venice, where he gave lessons in the Greek language. He afterwards taught Greek at Florence, Pavia, and at Rome, where he grew into favour with the papal court, and was sent to the council of Constance, where he died in 1415. Poggio Bracciolini, Leonardo Bruni, and Filelfo were the most distinguished pupils of Chrysoloras. Chrysoloras wrote a Greek grammar (entitled Ἐρωτήματα, *Questions*), which was one of the first published in Italy, and was afterwards printed at Ferrara in 1509.

CHRYSOME'LIDÆ, a family of coleopterous insects of the section *Cyclica*. The *Chrysomelidæ* constitute a very numerous and beautiful family of the beetle tribe; they are generally moderate in size, and frequently very brilliant in colouring. Between 70 and 80 species have been discovered in England; and the number of species contained in collections from various parts of the world may probably amount to four or five hundred. [Cyclica.]

CHRYSO'PHORA, a genus of coleopterous insects of the section *Lamellicornes*, and family *Xylophili*. But one species is known; it is a native of Columbia, and of a rich metallic green colour.

CHRY'SOPHRYS, a genus of fishes of the family *Sparidæ* (order *Acanthopterygii*). One species, the Gilt-Head (*Ch. aurata*), has been met with off our own coast, but is extremely rare: one of its chief localities appears to be the Mediterranean. (Yarrell's *British Fishes*, vol. i. p. 97.)

CHRYSOPHY'LLUM CAINI'TO, a West Indian fruit, commonly called the Star Apple, and belonging to the natural order *Sapotaceæ*. It abounds in a sweet harmless milky juice, that flows most copiously when the tree is beginning to mature its fruit, which grows on a moderately sized spreading tree, with very slender flexile branches. The flowers grow in small purplish bunches, and are succeeded by a round fleshy smooth fruit, resembling a large apple. In the inside it is divided into ten cells, each containing a black shining rhomboidal seed, and surrounded by a white, or sometimes purplish, gelatinous pulp, traversed with milky veins, and of a very sweet agreeable flavour. In an unripe state, the taste is said to be astringent and unpleasant. When cut across, the seeds, which are regularly disposed round the axis of the fruit, present a stellate figure, from whence the name of Star Apple is derived.

CHRYSOPLE'NIUM, a genus of plants belonging to the natural order Saxifragaceæ. Two species, *C. alternifolium* and *C. oppositifolium*, are natives of Great Britain. They are called Golden Saxifrages.

CHRYSOPRASE. [Agate.]

CHRYSOPS, a genus of dipterous insects of the family *Tabanidæ*. Eight or nine species have been discovered, of which two only are known in this country. All are blood-suckers. One species, *Ch. cæcutiens*, by no means uncommon, gives considerable pain by the insertion of its sharp proboscis into the skin, even through the sleeve of a coat. The other species is the *Ch. relictus*. Both are remarkable for the brilliancy of their large eyes. To this genus that of *Hæmatopota* is closely allied. Four species are British.

CHRYSOSTOM. [Dion.]

CHRYSOSTOM, ST. JOHN (χρυσόστομος, *i.e.* the golden-mouthed), the most renowned of the Greek fathers, was born of noble and very opulent parents, A.D. 354 (some writers say 344 and 347), at Antioch, the capital of Syria. He was educated for the bar, and studied oratory at Antioch under Libanius, who declared him worthy to be his successor, were it not that the Christians had made him a proselyte; and he spent some time in the schools of Athens. After a very successful commencement of legal practice, he relinquished the profession of law for that of divinity. At the age of twenty-three he was baptised by Meletius, bishop of Antioch, after which he withdrew into a solitary cavern, where he spent about two years in committing to memory the whole of the Bible, and in severely mortifying his carnal affections. The damp and unwholesome

air of the place reduced him at last to so ill a state of health, that he was obliged to return to Antioch, where, being ordained a deacon by Meletius (A.D. 381), he commenced his career as an eloquent popular preacher. At the age of forty-three he was made vicar to Flavianus, successor to Meletius. His fame as a church orator was now so established, that, on the death of Nectarius, archbishop of Constantinople, he was chosen by the people and priesthood of the city to fill that important office in 398. The resolute and fearless zeal of Chrysostom in the reformation of clerical abuses, and in the denunciation of licentiousness among the great, soon began to draw upon him the enmity of a party, who finally effected his banishment and death. Much is said by various writers both in commendation and reprehension of his character and conduct. His zeal for the promotion of his own sect was equalled only by his intolerance towards all others. In his visitation in Asia, two years after his consecration, he deposed at one time no less than thirteen bishops of Lydia and Phrygia; and in one of his homilies (tom. ix. p. 29) he charges the whole episcopal order with avarice and licentiousness, saying that the number of bishops who could be saved bore a very small proportion to those who would be damned. In his invectives he used no reserve in reproving even royalty itself, and the personal resentment of the Empress Eudoxia was probably the cause of all the disasters by which he was henceforth overwhelmed. A synod was assembled under his adversary Theophilus, at Chalcédon, before which Chrysostom was cited, and forty accusations, chiefly frivolous and vexatious, were preferred against him. He refused to submit to this tribunal, whereupon he was arrested and conveyed to Nicæa, in Bithynia, in 408; but, when it was known at Constantinople that their favourite preacher was banished, so alarming an insurrection ensued, that even Eudoxia entreated the emperor to recall him. Only two days elapsed before Chrysostom was brought back to Constantinople. The archbishop however gained little wisdom from experience; for soon after, when a statue of the empress was set up near the great Christian church, he compared her to Herodias. Another synod was called, which ratified the decision of the former, and again Chrysostom was arrested, and transported to Cucusus, a place in the mountains of Taurus. He bore his misfortunes with fortitude, and exerted himself in the conversion of the people about his place of banishment. His enemies soon determined to remove him to a more desolate tract on the Euxine, whither he was compelled to travel on foot. On arriving at Comána however, he died, Sept. 14, 407 being about sixty years of age. The Greek Church celebrates his feast, November 13th; the Roman, January 27th.

The works of St. Chrysostom are very numerous. They consist of commentaries, 700 homilies, orations, doctrinal treatises, and 242 epistles. The style is uniformly diffuse, and overloaded with metaphors and similes. 'Chrysostom's peculiar talents were those of a declamatory preacher whose art lay in warming the passions, not in convincing the reason, and whose pompous style and rhetorical flourishes, instead of being adapted to a simple narration of facts, were apt rather to exaggerate facts into miracles.' (Dr. Middleton, 'Mirac. Powers,' p. 72.) The chief value of Chrysostom's works consists in the illustration which they furnish of the manners of the fourth and fifth centuries. They contain a great number of incidental but very minute descriptions that indicate the moral and social state of that period. The circus, baths, houses, banquets, dresses, fashions, dancing, juggling, funerals,—in short, every thing has a place in the picture of licentious luxury which it is the object of Chrysostom to denounce. Montfaucon has made a curious collection of these matters from his great edition of the works of Chrysostom, 13 vols. folio (editio optima).

(*Mémoires de l'Acad. des Inscrip.*, vol. xiii. p. 474, and vol. xx. p. 197; also Jortin, *Eccles. Hist.*, vol. iv. p. 169, et seq.)

CHUB. [LEUCISCUS.]

CHUBB, THOMAS, was born in 1679, at East Harnham, a small village near Salisbury, and, after receiving a little instruction in mere reading and writing, was apprenticed to a leather-glove and breeches-maker in Salisbury. He was afterwards, as a journeyman, engaged in the business of a tallow-chandler in the same city. In both these employments he continued to be more or less concerned until the end of his life; and it certainly is a proof of remarkable mental energy that, in the midst of duties so humble, and merely manual, he contrived, by unassisted application, to acquire a general knowledge of literature and science, and to become a distinguished writer on subjects of religious and moral controversy. The discussions occasioned by the appearance, in 1710, of Whiston's Arian work on Primitive Christianity first occasioned Chubb to enter the field of controversy. In 1715 he published his 'Supremacy of God the Father asserted;' consisting of eight arguments from Scripture, proving the Son to be a subordinate and inferior being; which by opposite parties was equally extolled and condemned. Chubb replied to his Trinitarian opponents in 'The Supremacy of the Father vindicated.' These were followed by tracts almost without number. In 1730 he published a collection of thirty-three of these tracts in a 4to. volume. Sir Joseph Jekyl, master of the rolls, and others, praised and patronised him; and he was for a year or two in Jekyl's house in London, but he returned to his business at Salisbury. His next publications were, 'A Discourse on Reason, as a sufficient Guide in Matters of Religion;' 'On Moral and Positive Duties, showing the higher claim of the former;' 'On Sincerity;' 'On Future Judgment and Eternal Punishment;' 'Inquiry about Inspiration of the New Testament;' 'The Case of Abraham;' 'Doctrine of Vicarious Suffering and Intercession refuted;' 'Time for keeping a Sabbath;' and several other tracts upon interesting points of religious dispute. In 1738 appeared his 'True Gospel of Jesus asserted.' These works involved him in continued controversy, and pamphlets against him and his de-

fences were continually appearing until his death, in 1746. His posthumous works, similar in character to those published in his lifetime, appeared in 2 vols. 8vo., in 1748.

CHUDLEIGH. [DEVONSHIRE.]

CHUQUISACA. [BOLIVIA.]

CHUQUISACA, CHARCAS, or LA PLATA, the capital of Bolivia, in South America, is situated near 19° S. lat., and between 64° and 65° W. long., in a high plain which forms the watershed between the Paraguay and the Rio Grande, at an elevation of 10,000 feet above the level of the sea; to which circumstance its delightful climate must be ascribed. The plain is watered by the Cachimayo, a tributary of the Pilcomayo, which falls into the Paraguay. The town is well built, and has a magnificent cathedral, with large towers rising from each angle. There is a university, which has a good library; a college; a mining-school; and churches and convents with domes and steeples, which from a distance give the appearance of a large town. The town is the seat of the legislature and government of the republic, and has 26,000 inhabitants. The former palace of the Archbishop of Charcas is now the residence of the president of the republic. (General Miller; Temple.)

CHURCH, or KIRK, which is precisely the same word in a varied orthography, is supposed to be the Greek word *κυριακός* (kurikos), a derivative of *κύριος* (lord), one of the designations of Jesus Christ. It is one of the Saxon adoptions from the Greek. *Kúriakos* is an adjective, and we must understand after it some word denoting flock, or house, the Lord's flock, the Lord's house—the two senses in which kirk, or church, is used.

The word Church represents the Greek term Ecclésia (*ἐκκλησία*), which often occurs in the New Testament; it was adopted into the Latin language without any change, and now gives us our words ecclesiastics and ecclesiastical, which correspond to the Saxon terms churchmen, and of churchmen. The meaning of the word *ecclesia* among the classical Greek writers is 'meeting or assembly;' and in this or the somewhat modified sense of 'community' it was adopted by the writers of the New Testament.

The whole community of Christians thus constitute the Church. This is the sense in which the word is most commonly used in the New Testament: as when it is said that 'the Lord added daily to the Church such as should be saved.' (Acts ii. 47.) When thus used by the Apostles, it comprehended all the disciples of Christ, without regard to questions which divided the opinions of Christians even in the earliest times; and it is still often used to denote the whole body of Christians, notwithstanding any peculiarities in their church order and ritual, or however they may understand the doctrines of Christ and the Apostles.

The term Church is now generally used in a limited sense to denote the various Christian communities, the members of which are united respectively among themselves by a unity of doctrine and discipline. The Roman Catholic Church contains the greatest number of individuals who acknowledge a common bond of union, even though they are members of different political communities. Some churches, such as the United Church of England and Ireland, have the form and in some degree the reality of political institutions, which a church must bear when it is founded by a law or statute. There are communities of Christians who do not style themselves churches, though they are united by the bonds of a common doctrine and common forms of worship.

Every community of Christians, however small, may be properly entitled a church, if we regard the original meaning of the term; and all Christians, whatever particular communities they may belong to, may be properly considered as forming one church or one body by virtue of their acknowledging themselves followers of Jesus Christ.

The word Church is often misused, or used in such a way as to cause confusion of ideas. It is an example of such confusion when the term Church is limited to the clergy or to the ministers of religion.

CHURCH, an ecclesiastical edifice, sometimes built after the model of a modern basilica, and sometimes in the form either of a Latin or a Greek cross. The basilica form however must be considered as belonging to the churches of the early Christians. The origin of the difference between the form of the Latin and Greek cross belongs to the period of the schism in the church. The Latin was in common use until the Reformation. Some resemblance to the basilica form may be traced in modern churches erected since the Reformation to the present day. The most perfect resemblance to the church basilica is observable in the cathedrals of Europe, and especially in England. Attached to these edifices there are still many of the various buildings which formed the monastic establishments of former days. A church or cathedral with a Greek cross has the transept as long as the nave and choir: the greater part of the Greek churches are built in this form. The Latin cross has the nave much longer than the transepts and choir. Many of our modern churches consist of only one long nave, with an altar at the east end: the cross form, or transept, is in some instances scarcely perceptible, and in others entirely omitted.

Churches are of five classes—metropolitan, cathedral, collegiate, conventual, and parish churches. The term cathedral is derived from *καθέδρα*, 'a seat,' from the seat or throne of the bishop being placed therein. Cathedrals are the chief ecclesiastical structures of the dioceses in which they are situated.

Almost every cathedral is varied in plan, although the leading features, the nave and choir, are found in almost all. The plan usually consists of a galilee, or chapel at the principal entrance; the nave, or main body of the church; the side aisles, which do not rise so high as the nave, and are placed on each side of the nave, sometimes with chapels, at other times without, between the openings formed by the windows; the choir, or place for the ceremonies of the church; the transept, or division at right angles to the end of the nave next the choir, which projects on each side, and forms a cross on the plan. Some cathedrals

have a double transept, and the transepts have often aisles. At the end of the choir is the high altar, behind which is occasionally a lady chapel, or chapel to the Virgin. The choir end of a cathedral is sometimes terminated by an apsis or semicircular end. Along the sides of the choir are ranged richly carved seats, ornamented with arches, pinnacles, and tracery, carved in oak. The bishop's seat, richer than the others and raised above them, is on one side, at the eastern end. The choir has also side aisles. Cloisters and a chapter-house are usually attached to English cathedrals. The minor parts of a cathedral are the muniment room, the library, the consistory court, the vestries of the dean and chapter, minstrels' chapels, a font, and a minstrels' gallery. Beneath the body of the cathedral there is usually a crypt, or low basement, supported on arches springing from thick columns, as in Canterbury Cathedral and others.

The ancient cathedrals of England, France, and Germany display all the varieties and excellencies of Gothic architecture. Like all ecclesiastical buildings, they stand with the altar towards the east, and the principal entrance to the west; the transept is placed north and south. At the point of intersection of the transept with the nave there is usually a tower, sometimes surmounted by a spire. Sometimes the principal or western front has a tower at each angle, which in some instances are also terminated with spires. The nave of a Gothic cathedral is supported by clustered columns, arched from one to the other, over which there is usually a row of small arches forming a gallery, which is called the triforium, and above are windows called clere-story windows. The aisles are lighted by windows placed between the openings or the arches of the nave; and, externally, the buttresses of the aisles often rise, supported on an arch, to the wall of the nave: these are called flying buttresses. The exterior walls of the cathedral, with its towers, are generally decorated with buttresses, surmounted with pinnacles; and between the buttresses are the openings or windows of the nave and aisles. The ceiling of the nave is sometimes of stone, and covered with tracery formed by the intersection of the arches which spring from the clustered columns of the nave. The west or principal front is usually the most highly decorated with tracery, pinnacles, and sculptured figures. In the side aisles, and the aisles of the choir, there are often chapels richly designed, which contain the tombs of the founder, &c. Our cathedrals abound with monuments of various epochs, from the early Norman period of our history to the present time. The chapter-house and cloister are large and important features in many of our cathedrals. The finest chapter-houses in England are of a polygonal form on the plan, with a seat running round from the entrance, and the interior decorated with sculpture, and in some instances with painting. In some chapter-houses a column, or cluster of columns, rises from the centre of the room, from which spring the sides of pointed arches, meeting the other halves of pointed arches rising from the columns at the angles of the walls.

The cloisters are rectangular inclosures, with a richly ornamented and arched gallery running round the sides, and a wall forming the back of the inclosure: the arches, which are filled with tracery, look into an area, where probably the monks were formerly buried. There are also cloisters in some of the colleges of Oxford and Cambridge. This part of the ecclesiastical structure may have been used not only for exercise, but for study. In Italy the cloisters are often decorated with frescoes by celebrated masters.

Some parish churches have very much the form of a cathedral. The chancel of a church corresponds in situation to the choir of a cathedral. In parish churches the great tower is seldom placed at the intersection of the nave and transept, but forms the entrance at the west end, and contains the belfry.

The numerous cathedrals of France, Italy, and Germany present beautiful specimens of architecture, not only in the Gothic style, but also in the Italian style. St. Peter's at Rome is the largest cathedral in Europe. Vienna and Strassburg have the highest spires; the former is 465 feet, the latter 456 feet high.

(Britton's *Cathedrals;* Browne Willis's *Survey of the Cathedrals.*)

CHURCH BRIEF. [BRIEF.]

CHURCH DISCIPLINE ACT was passed in 1840 (3 & 4 Vict. c. 86). It is called an Act 'for better enforcing Church Discipline;' but its object is to regulate proceedings by the bishop of a diocese against any clerk in holy orders of the United Church of England and Ireland, who may be charged with any offence against the laws ecclesiastical, or concerning whom there may exist scandal or evil report as having offended against the said laws.

CHURCH-RATES. As to the origin and history of church-rates, there is difference of opinion. The practice of levying them in England has long existed, and what concerns us is to show the present nature of this tax.

Church-rates are imposed by the parishioners at a meeting summoned by the churchwardens for that purpose. Upon the churchwardens, conjointly with the minister, devolve the care of the fabric of the church and the due administration of its offices. It is the duty of the churchwardens to summon parish meetings for the purpose of levying rates; and, if they neglect to do so, they may be proceeded against criminally in the ecclesiastical courts. They may also be punished by the ecclesiastical courts for neglecting to make repairs for which money has been provided by the parish; but if they have no funds in hand, and if they have not failed to call the parishioners together, they cannot be punished. A mandamus also is grantable to compel the churchwardens to call a meeting. If the parish fail to meet, the churchwardens then constitute the meeting, and may alone impose a rate; but, if the parish should assemble, it rests with the parishioners to determine the amount of the rate, or to negative it altogether.

Before the Reformation the parishioners could be punished in the ecclesiastical court for failing

to repair the parish church; and the punishment was to place the parish under an interdict or sentence of excommunication. But there is now no means of compelling the parishioners to provide church-rates. There is no remedy by mandamus: the Court of Queen's Bench will grant a mandamus, as has been already said, directing churchwardens to call a parish meeting, but not to compel parishioners to make a rate. The ecclesiastical courts cannot make a rate, nor appoint commissioners to make one.

The existing poor-rate of the parish is generally taken as the criterion for the imposition of the church-rate; but decisions as to poor-rates are not binding in cases of church-rates, and the proper test for church-rates is a valuation by competent judges, grounded on the rent the tenant would be willing to pay for the premises. All property in the parish is liable except the glebe-land of that parish, and the possessions of the crown, when in the actual occupation of the crown, and places of public worship. Stock in trade is not generally rated for church repairs, but a custom may exist rendering it rateable in a particular parish. The ecclesiastical courts have the exclusive authority of deciding on the validity of a rate, and the liability of a party to pay it; but a ratepayer cannot by an original proceeding in those courts raise objections to a rate for the purpose of quashing it altogether. If he wishes to dispute it, he ought to attend at the vestry, and there state his objections; if they are not removed, he may enter a caveat against the confirmation of the rate, or refuse to pay his assessment. In the latter case, if proceeded against in the ecclesiastical court, he may in his defence show either that the rate is generally invalid, or that he is unfairly assessed. The consequence of entering a caveat is an appeal to the ecclesiastical judge.

A retrospective church-rate, or rate for expenses previously incurred, is not a valid rate.

Previously to 53 Geo. III. c. 127, the only mode of recovering church-rates from parties refusing to pay was by suit in the ecclesiastical court. By that statute, where the sum to be recovered is under 10*l.* and there is no question as to the validity of the rate, or the liability of the party assessed, any justice of the county where the church is situated may, on complaint of the churchwardens, inquire into the merits of the case, and order the payment. Against his decision there is an appeal to the quarter sessions. By several statutes, principally the 58 Geo. III. c. 45, and 59 Geo. III. c. 134, acts passed for the promotion of building churches, the common-law powers of churchwardens have been varied, and extended so as to enable them to raise money on the security of church-rates, and to apply them for the enlargement, improvement, &c. of churches, and for the building of new ones, &c. Of late, cases have occurred in which a person who has refused to pay church-rates has been indicted, that is, proceeded against criminally, convicted, and punished by imprisonment. The method of enforcing payments of church-rates is by distress of the goods of the person who refuses to pay his rates. The Society of Friends consider it a matter of conscience to refuse to pay church-rates.—('Rules of Discipline of the Religious Society of Friends,' &c., London, 1834.)

Lord Althorp, as chancellor of the exchequer in Lord Grey's government, brought in a bill for the abolition of church-rates in 1834, which proposed to charge the Consolidated Fund with 250,000*l.* a year, to be devoted to the repair of parish churches and chapels (including the chancel); but the bill was not carried, chiefly owing to the opposition of the dissenters. In 1837 Lord Melbourne's government brought in a bill to abolish church-rates, and provide for the objects of them by a surplus created by a better management of the church lands held by the archbishops, bishops, and deans, and chapters; these lands to be managed by commissioners, and 250,000*l.* a year, to be the first charge on the surplus. But the opposition of the clergy and of church lessees frustrated this measure also.

It has been stated in the House of Commons, that in 5000 parishes in England no church-rates are levied. There are endowments in many parishes for the repair of the church, which render church-rates unnecessary; and in many parishes arrangements have been made for voluntary subscriptions to avoid squabblings between churchmen and dissenters, who object to paying rates for the support of places of worship to which they do not go.

The Parliamentary Returns respecting local taxation issued in 1839 (No. 562) give the following particulars respecting church-rates in England and Wales for the year ending Easter, 1839:—Total amount of rates and moneys received by churchwardens, 506,812*l.*, of which 363,103*l.* was derived from the church-rates, and 143,709*l.* from other sources. The total sum expended was 480,662*l.*, and of this sum 215,301*l.* was expended in the repair of churches. The debt secured on church-rates amounted to 535,236*l.* There is a more complete return for the year ending Easter, 1832, which shows some of the principal of the 'other sources,' alluded to in the return of 1839. In 1831-2 the total amount which the churchwardens received was 663,814*l.*, derived from the following sources:—Church-rates, 446,247*l.*; estates, &c., 51,919*l.*; mortuary or burial fees, 18,216*l.*; poor-rates, 41,489*l.*; pews and sittings, 39,382*l.*; other sources not stated, 66,559*l.* The payments by the churchwardens in the same year amounted to 645,883*l.*, and included 46,337*l.* for books, wine, &c.; salaries to clerks, sextons, &c., 126,185*l.*; organs, bells, &c., 41,710*l.*; and repairs of churches, 248,125*l.*

CHURCH, STATES OF THE. [PAPAL STATES.]

CHURCHILL. [MARLBOROUGH, DUKE OF.]

CHURCHILL, CHARLES, was born in 1731, in Westminster, where, in St. John's parish, his father was curate. He was educated at Westminster School, and then sent to Oxford; where he was rejected for his levity at the entrance examination. He was shortly afterwards admitted a member of the University of Cambridge, where however he took no degree. In his seventeenth year he married, and retired to Sunderland,

to prepare for taking orders. At the age of twenty-five he was ordained by Bishop Sherlock, and officiated as curate of Rainham in Essex. In 1758, on the death of his father, he succeeded to the curacy of St. John's in Westminster, and from this period a total alteration took place in his character and habits, which, from having been hitherto those of a moral, domestic, and studious man, became gradually ruined, and terminated in avowed and abandoned licentiousness. His first poems were the 'Bard,' and the 'Conclave,' for which he was unable to obtain a publisher. The 'Rosciad,' a very clever and severe satire upon the principal theatrical managers and performers at that time, was published in 1761. It obtained an amazing popularity, and was answered by the numerous parties attacked in Churchilliads, Murphyads, Examiners, &c. Like most of Churchill's productions, it is more remarkable for energy and eloquent roughness of sarcasm, than for polished phraseology or refined sentiment. His next poem, the 'Apology,' written in reply to his critical adversaries, is perhaps the most finished and correct of his works. The poem called 'Night' was intended as an apology for his own nocturnal celebration of the rites of Bacchus. The 'Ghost,' a poetical satire on the ridiculous imposture of Cock Lane, served but little to increase the literary fame of its author. 'Pompoeo,' in this poem, is intended for Dr. Johnson, who had designated Churchill 'a shallow fellow.' In 1762 Churchill became acquainted with John Wilkes, and contributed to the pages of the 'North Briton.' To gratify his political patron, he wrote the 'Prophecy of Famine, a Scots Pastoral,' which was greatly extolled, not only by Wilkes and the politicians of his party, who said it was 'personal, poetical, and political,' but by the literary public.

The praise and profit which Churchill obtained by this *jeu-d'esprit* seem to have overwhelmed his common sense: he plunged at once into the greatest irregularities of conduct, threw up his curacy, and separated from his wife. His poem called 'The Conference' was composed whilst he seemed to suffer some feelings of contrition. Of the many poems published after this, the 'Candidate' is the best. Churchill was a close and occasionally a very successful imitator of Dryden. Cowper, in a long passage in his 'Table Talk,' assigns him, on the whole, a distinguished place as a poet, calling him a 'spendthrift alike of money and of wit.' He died at Boulogne, in 1765, while on a visit to Wilkes. His complete works have been recently edited by Mr. Tooke in 3 vols. post 8vo., with a life.

CHURCHWARDENS are parish officers. There are usually two churchwardens in each parish, but by custom there may be only one. The eighty-ninth canon of 1603 directs that 'churchwardens shall be chosen yearly in Easter week by the joint consent of the minister and parishioners, if it may be; and, if they cannot agree, the minister shall choose one and the parishioners another.' It has however been questioned how far these canons are binding upon the laity, even in matters ecclesiastical.

The usual duties of churchwardens are, to take care that the churches are sufficiently repaired; to distribute seats among the parishioners, under the control of the ordinary; to maintain order and decorum in the church during the time of divine service; and to provide the furniture for the church, the bread and wine for the sacrament, and the books directed by law to be used by the minister in conducting public worship. In addition to these ordinary duties, the churchwardens are by virtue of their office overseers of the poor, under the statutes for the relief of the poor; they summon vestries; they are also required to present to the bishop all things presentable by the ecclesiastical laws, which relate to the church, minister, or parishioners. By 5 & 6 Will. IV. c. 62, s. 9, it is enacted that they shall make and subscribe a declaration before the ordinary (the bishop of the diocese, or the archdeacon, official, or surrogate) that they will faithfully and diligently perform the duties of their offices. This is done at the archdeacon's visitation. The old churchwardens usually act until the archdeacon's visitation, about the month of June, though their successors are appointed at Easter.

If churchwardens are guilty of any wilful malversation, or if they refuse to account to the parishioners at the termination of their period of service, they may be proceeded against summarily before the bishop by any parishioner who is interested, or the new churchwardens may maintain an action of account against them at common law.

Under the 59th Geo. III. c. 12, s. 17, churchwardens and overseers are empowered to take and hold lands in trust for the parish as a corporate body; and by a decision under this act, they can also take and hold any other lands and hereditaments belonging to the parish, the profits of which are applied in aid of the church-rate.

(Burn's *Justice* and Burn's *Ecclesiastical Law*, tit. 'Churchwardens;' *The Churchwarden's Guide*, C. Knight, London.)

CHURN. [BUTTER.]

CHUSAN ISLANDS are a group of islands on the eastern coast of China, which form an appendage to the province of Che-kiang. Their number is very great, and they are dispersed over that part of the sea where 30° N. lat. cuts 122° E. long. Between the Quesan Islands and Chusan Harbour, through a space of about sixty miles in length and thirty in width, the number of islands exceeds three hundred; but others, apparently not less numerous, lie north of Chusan Island. These islands contain numerous harbours or places of perfect security for ships of any burden. The islands, though mostly near to each other, are separated by channels of great depth.

Chusan, the principal island, which gives its name to the group, is about thirty miles long, and varies in width from six to eight miles. The surface is diversified by pleasant heights and well-cultivated valleys. The principal harbour is on the southern coast towards the Chinese continent, and only a few miles distant from Kee-to Point, the most eastern cape of China. The harbour is formed by three small islands, which lie about a mile from Chusan, and has four entrances; it has excellent anchorage. About a mile from this

harbour is the capital of the island, Ting-hae. The intervening space is a plain, intersected with rivulets and canals, and cultivated like a garden. The town is inclosed by walls thirty feet high, which overtop the houses and give the place the appearance of a large prison. The town is in some degree surrounded as well as intersected by canals, and the bridges thrown over them are steep and ascended by steps. The streets are very narrow, and are paved with square flat stones. The houses are low and mostly of one story.

These islands are of great importance to China in a commercial view, especially for its intercourse with Japan. The junks, by which this commerce is carried on, assemble at the Chusan Islands, and depart thence for Nangasaki. The islands are of importance, as protecting the commerce from the Strait of Formosa on the south, to the peninsula of Shang-tong on the north.

In 1840, when the disputes between the British and Chinese governments respecting certain commercial transactions at Canton had reached such a height that England thought it expedient to appeal to arms, a British force was sent to the Chusan Islands, which captured them after a slight resistance. A truce was agreed upon near Tientsing, between the Chinese imperial commissioner and the British plenipotentiaries, who left Chusan for Canton on the 15th of November, 1840. On the 24th of February, 1841, the British were compelled to abandon the Chusan Islands on account of the diseases which had attacked the troops. A new appeal to arms was made, and the Chusan Islands were again captured in 1842, after a much more vigorous defence; and, after a British army had taken the town of Shanghae, and advanced to the walls of Nanking, the peace of 1842 was concluded. [CHINA.]

(Staunton, *Authentic Account of an Embassy to the Emperor of China.*)

CHUSITE, found by Saussure in the porphyritic rocks near Limburg, occurs massive, granular, translucent, and of a greasy lustre. Dr. Thomson refers it to Chrysolite.

CHYLE, CHYME. [DIGESTION.]

CIBBER, CAIUS GABRIEL, a celebrated sculptor, was a native of Holstein, and came to England during the Protectorate of Oliver Cromwell. The two figures of Raving and Melancholy Madness, which adorned the principal gate of Old Bethlehem Hospital, and which are now in the hall of the new hospital in St. George's Fields, were his work, and also the bassi-rilievi on the pedestal of the London Monument. He was father of Colley Cibber, the actor, dramatist, and poet laureat. Mr. Cibber was employed in the latter years of his life by the earl, afterwards duke of Devonshire, in the improvement and decoration of the magnificent family seat at Chatsworth.

CIBBER, COLLEY, was born Nov. 6, O. S., 1671, in Southampton Street, Covent Garden. In 1682 he was sent to the Free School at Grantham, Lincolnshire. In 1689 he indulged an early conceived inclination for the stage, in which he attained some success. When scarcely twenty-two years of age, after a very short courtship, he married Miss Shore, to the great anger of his father. Mr. Cibber's professional progress was very slow for some years, notwithstanding his having turned author, and the success of his comedies, 'Love's Last Shift,' 'Love makes a Man,' 'She Would and She Would Not,' 'The Careless Husband,' &c. In 1711 however he became joint patentee with Collier, Wilks, and Dogget, in the management of Drury Lane, and continued in it till the death of Mr. Eusden, the poet laureat, in 1730, when Cibber was appointed to succeed him, and then he withdrew, after having been manager for nineteen years. In 1745 he played Pandulph in his own tragedy of 'Papal Tyranny,' being at that time in the seventy-fifth year of his age. On Dec. 12, 1757, he was found dead in his bed.

Mr. Cibber has described himself with considerable candour in his well-known and very amusing 'Apology' for his life. As a writer of comedy, he is inferior perhaps only to Congreve, Wycherly, and Vanbrugh. His best comedy is allowed to be 'The Careless Husband,' the dialogue of which is delightfully easy and polished. He was the author and adapter of nearly thirty dramas of various descriptions. His 'Apology' is published in two vols. 12mo., and his dramatic works in five vols. 12mo.

CIBBER, THEOPHILUS, the son of the laureat, was born on Nov. 26, 1703. He went on the stage early, and acquired considerable reputation in characters similar to those supported by his father. After a life of extravagance and profligacy, of alternate prodigality and penury, he was drowned at sea in Oct. 1758, while proceeding to perform at the Dublin Theatre.

Cibber wrote and altered a few unimportant dramas, and was concerned in a work entitled 'An Account of the Lives of the Poets of Great Britain and Ireland,' 5 vols. 12mo., which was published under his name only.

CIBBER, SUSANNA MARIA, the daughter of Mr. Arne, an upholsterer in Covent Garden, and sister of Dr. Thomas Arne the composer, made her first appearance as a singer. In 1734 she married Mr. Theophilus Cibber, and in 1736 attempted the part of Zara in Hill's tragedy of that name. Her success was most decided, and she rapidly became a great and deserved favourite. Her marriage was an unfortunate one, and a separation took place about five years afterwards. She died Jan. 30, 1766, and was buried in the cloisters of Westminster Abbey.

CICADARIÆ. [HOMOPTERA.]

CICADE'LLA (Latreille), *Cercópidæ* (Leach), a family of insects of the order *Hymenoptera* and section *Cicadariæ*. This family is synonymous with the *Cicáda ranatra* of Linnæus. The species may be distinguished from those of allied groups by their having the antennæ situated between the eyes. These insects are generally small, and leap by means of their hind legs. The genera may be arranged under two heads or sections:—1st, Those in which the head is hidden by the prothorax, which is always very large, much humped, and has the posterior portion produced over the abdomen so as completely to cover that

part, or even extend beyond its apex; antennæ very small, and inserted in a cavity on the head. Genera :—*Membracis, Tragopa, Darnis, Bocydium*, and *Centrotus*. 2nd, Those in which the head is on a line with the upper surface of the prothorax, or nearly so; the latter part is of moderate size and without the extraordinary processes which characterise the former division; the wings consequently are always entirely exposed; the scutellum is distinct and triangular. Genera :—*Ætalion, Ledra, Ciccus, Cercopis, Eulopa, Euplex, Penthimia, Jassus, Tettigonia*, and some others.

CICENDIA, a genus of plants belonging to the natural order *Gentianaceæ*.

C. hyssopifolium is a common plant in many parts of the East Indies, and, like the whole of the order to which it belongs, possesses a bitter principle, though not so intense as some of its allies. It is employed by the natives of India as a stomachic, and is administered in the form of decoction or powder. In addition to the tonic action, it is said to act as a laxative.

C. filiformis has yellow flowers, and is a native of Europe. It is found in damp sandy places in England and Ireland. In their cultivation the species of Cicendia require the same treatment as Gentians.

CICE'R, a genus of leguminous or fabaceous plants, allied to the vetch. One species, *Cicer arietinum*, the Chick Pea, a native of Egypt and the Levant, is cultivated in the south of France for its seeds, which bear a striking resemblance to a ram's head. They have for ages been a common food in the eastern parts of the world, but their taste is unpleasant to Europeans. It is an annual, and bears pale violet solitary flowers. Two or three other species are known to botanists. The most remarkable circumstance about *Cicer arietinum* is, that during the heats of summer its leaves and stem exude little viscid drops, which, on evaporation, leave behind crystals, nearly pure, of oxalic acid. Its grateful refrigerating qualities are owing to this acid. Those who are predisposed to calculous complaints should avoid its excessive use, either as a salad or boiled. The frequent use of this vegetable, or any other abounding with oxalic acid, leads to the formation of the oxalite of lime, or mulberry calculus, in the bladder, which is the most painful, and the least influenced by internal treatment.

CI'CERO, MARCUS TULLIUS, was born at Arpinum (Arpino) on the 3rd of January, 106 B.C., and was thus a few months older than Cn. Pompeius Magnus, who was born on the last day of September in the same year.

Marcus Cicero, the grandfather of Cicero, was living at Arpinum at the time of Cicero's birth, and appears to have been a man of influence there. The old man vehemently opposed the introduction of the vote by ballot into the municipal proceedings at Arpinum, when a law to that effect was proposed by one Gratidius, whose family was intimately connected with the Marii, and whose sister was the wife of old Cicero, and consequently the grandmother of the orator. Marcus Cicero had two sons, Marcus and Lucius. Lucius left a son of the same name, to whom his cousin Cicero was much attached.

Marcus Cicero, the father of the orator, though he was on intimate terms with the leading men of the times, was compelled, by the delicacy of his health, to live in retirement; but this enabled him to pay the more attention to the education of his two sons Marcus and Quintus. His wife Helvia had a brother, Aculeo, the intimate friend of L. Crassus, a man distinguished for his oratory and the public offices he had held; and the two sons of Aculeo, with their cousins the young Ciceros, received their education together under teachers selected by Crassus. Cicero was afterwards removed by his father to Rome, where he had the assistance of Greek instructors, more particularly the poet Archias. As soon as he had exchanged the boy's dress for the toga, he used to attend Q. Mucius Scævola, the augur, when he gave his answers to the clients who asked his legal advice, and upon his death he attached himself to the pontifex of the same name, who was also a distinguished lawyer. Cicero relieved the severity of his legal and philosophical studies by an intermixture of poetry. Even as a boy he had composed a poem called 'Pontius Glaucus,' which was extant in Plutarch's time. In B.C. 89, Cicero served in the Marsic War under Pompeius Strabo, the father of Pompeius Magnus. On the termination of the Marsic War (B.C. 90), Cicero attended the lectures of two distinguished Greek philosophers; first Philo, who then presided over the Academy, and soon after Apollonius Molo of Rhodes, who had been driven from their homes by Mithridates, king of Pontus. The aggression of the king, which had been favoured by the civil war in Italy, brought on a war with the Romans, and L. Cornelius Sulla was appointed to the command. The appointment excited the opposition of the Marian party, and Sulla was unable to maintain the superiority of his party at Rome but by bloodshed and proscription. His departure for the Mithridatic War was the signal for reaction, and Marius re-entered Rome (B.C. 87) with the Consul Cinna, and put to death some of the most distinguished leaders of the aristocratic party. Of Cicero's pursuits during the three or four next years little more is known than that he wrote some rhetorical works. He was also in the habit of declaiming both in Greek and Latin, and received instruction in philosophy and logic from the stoic Diódotus, who afterwards lived under his roof. In his twenty-sixth year (B.C. 81), when Sulla had established the supremacy of the nobles, Cicero made his first appearance as an advocate. The speech in favour of Quinctius, though not the first he delivered, is the earliest of those which are extant. In the following year his voice was first heard in the forum in defence of Sextus Roscius of Ameria, on a charge of parricide. After spending two years in the severe duties of his profession, the delicacy of his health led him to withdraw for a time from Rome. He first visited Athens (B.C. 79), where he devoted six months to Antiochus of Ascalon, a philosopher of the old Academic school, and also heard others. He subsequently visited Rhodes, and again studied under Molo.

In the year B.C. 77, after Sulla's death, Cicero returned to Rome, and married Terentia, whose sister Fabia was one of the vestal virgins. He applied himself again with zeal to the law courts and the forum, in which at this time the most distinguished orators were Aurelius Cotta and Hortensius. In B.C. 76 Cicero was elected a quæstor, and the lot gave him the western part of Sicily for his province (B.C. 75). Sicily was one of the granaries of Rome, and the quæstor's chief employment was to supply corn for the use of the city; and, as there happened to be a peculiar scarcity this year at Rome, it was necessary to the public quiet to send large and speedy supplies,—a duty which Cicero, according to his own account, discharged with satisfaction to all persons in Sicily. In the hours of leisure he employed himself in his oratorical studies; so that on his return from Sicily his powers were, according to his own judgment, in their full maturity. The two consuls, L. Lucullus and M. Aurelius Cotta (B.C. 74), were now engaged in the war with Mithridates, which had been renewed. In B.C. 73, an alarming insurrection broke out in Italy, which originated with some gladiators, and under the conduct of Spartacus threatened the existence of the state. None of the speeches which Cicero delivered during this period have been preserved, except those which relate to the prosecution against Verres for his mal-administration of Sicily and his shameless plunder of the Sicilians during his three years' government. Cicero had many difficulties to overcome in his endeavours to subject the criminal to the punishment of his crimes. After these were overcome, a single speech of Cicero's (5th of August B.C. 70) followed by an examination of his witnesses and the production of documentary evidence, produced an impression so unfavourable to Verres, that even his advocate Hortensius was abashed, and Verres went into exile. The five other speeches against Verres, in which Cicero enters into the details of his charges, were never spoken, if we may believe the commentator upon these orations, who passes under the name of Asconius. In B.C. 70 a law was passed on the proposal of the Prætor Aurelius Cotta, hence called the *Lex Aurelia*, by which the equites (knights) and certain of the commoners (*tribuni ærarii*) were associated with the senators in the constitution of the juries for the trial of criminal offences of a public kind. This change in the constitution of the jury-lists was rendered necessary by the corruption of the senators who up to this time had alone constituted the jury (judices) list. It was subsequent to the enactment of this law that Cicero made the speeches in defence of Q. Roscius, M. Fonteius, and A. Cæcina. The first of these was the celebrated actor, whose name has since become proverbial. M. Fonteius was the object of a prosecution for extortion and peculation (*de repetundis*) in the province of Gallia Transalpina. The cause of Cæcina was of a private nature, and turned entirely upon points of law. The curule ædileship of Cicero (B.C. 69) had little of that magnificence which was usually displayed in this office, but it gave the Sicilians an opportunity of showing their gratitude to the prosecutor of Verres, by supplies for the public festivals. In B.C. 66 Cicero was prætor. The most remarkable event in his prætorship was the passing of the Manilian law, by which the command of the war against Mithridates was transferred to Pompeius Magnus, whose claims Cicero supported in a speech which still remains. In this year he also defended Cluentius in a speech which is still extant. Before the close of his prætorship he betrothed his daughter Tullia, who could not have been more than ten years old, to C. Calpurnius Piso Frugi. His son Marcus was not born until the middle of the following year.

On the expiration of his prætorship, he declined the government of a province, which was usually given to a prætor on retiring from his office. The return of Atticus from Athens at this time was most opportune to his friend Cicero, who looked upon the following year (B.C. 64) as the most critical in his life; and Atticus, being intimately connected with the influential men of the party of the nobles, could give essential assistance to a man who had no ancestral dignity, against six candidates, two of whom were of patrician blood, while the fathers or ancestors of all had already filled public magistracies. Cicero's father just lived to witness the election of his son to the consulship. From this point the life of Cicero is inseparably connected with the history of the times.

On the kalends of January (B.C. 63), immediately upon his assuming the consular robes, he attacked a tribune, P. Servilius Rullus, who had a few days before given notice of an Agrarian law. [AGRARIAN LAWS.] Of this speech, which was addressed to the Senate, there exists a considerable fragment, which shows that Cicero was already prepared to attach himself to the party of the nobles; whereas, up to this time, his political life had been of an opposite complexion. Before the people indeed, to whom he addressed two speeches upon the same subject, Cicero still wore the popular mask; and while he expressed his approbation of the principle of Agrarian laws, and pronounced a panegyric on the two Gracchi, he opposed the particular law in question on the ground that the bill of Rullus created commissioners with despotic powers that might endanger the liberties of Rome, and he prevailed on one of the other tribunes to put his veto upon the bill. In this year Cicero also defended Rabirius, who was charged with the murder of the tribune Saturninus three-and-thirty years before. The speech in which Cicero opposed the restoration of their civil rights to the sons of those who had been proscribed by Sulla is not extant. As to the conspiracy against Catiline, and the several speeches which were made by Cicero in relation to him, see CATILINA.

Two other causes, in which Cicero's services as an advocate were called forth during this year, were those in which he defended C. Calpurnius Piso, the consul of 67 B.C., and L. Murena, the consul elect. The oration in defence of Piso is not extant. Murena was charged with bribery, treating, and other violations of the law, in his late election to the consulship; and his guilt will not be doubtful to a careful reader of his advo-

cate's speech. The prosecution was supported by the distinguished jurist Servius Sulpicius, and Cato, both of them men of undoubted integrity.

The success of Cicero, in crushing the Catilinarian conspiracy, would probably have earned for him the unmixed good-will of the aristocratic party, had he not offended them by his vanity and presumption. He wrote a history of his consulship in Greek, and even sung his own glories in verse; but the most decisive evidence of his vanity is the letter to his friend Lucceius ('Ad. Fam.' v. 13). He had now changed his principles and attached himself solely to the party of the nobility. In B.C. 62, Quintus Cicero, the brother of the orator, was appointed to the government of the rich province of Asia, as successor to L. Flaccus, who came home with the imputation of having been guilty of extortion, for which he was called to account two years after. This L. Flaccus had been the chief prætor in the consulship of Cicero, and in that capacity had been of great service in the detection of the conspiracy, so that he had a certain claim upon Cicero, which was not neglected. But this trial was preceded by one of the same nature which more nearly concerned the orator*. C. Antonius, who had been his colleague in the consulship, was called from the province of Macedonia, where he had presided for two years, and had to defend himself against an impeachment for the gross rapacity of which he had been guilty. That Cicero was implicated in the guilt of Antonius is almost proved by one of his own letters. The very day on which Antonius was condemned was marked by an event still more fatal to Cicero—the adoption of Clodius, his enemy, into a plebeian family, B.C. 59. The object of this ceremony was to render Clodius eligible to the tribunate, from which, as a patrician, he was excluded; and no sooner was the obstacle removed than he was elected. Clodius indirectly attacked Cicero by announcing several measures, one of which was to the effect that whoever took the life of a citizen uncondemned and without a trial should be interdicted from fire and water. Cicero was not named in this law, but it was aimed against him for the summary mode of proceeding as to the conspirators; and he accordingly left Rome about the end of March B.C. 58, and finally took refuge at Thessalonica in Macedonia. His conduct in his exile was mean; and he is himself the evidence for his own unmanly complaints. Towards the end of the year he removed to Dyrrhachium; and in August B.C. 57 he was recalled by a law passed by the centuries. Cicero had already embarked for Italy on the day on which the decree of the senate was passed, preparatory to the law of the centuries: he landed the next day at Brundisium, where he was received by his daughter Tullia. He was well received by the Italian towns on his way to Rome.

Though Cicero was restored to his civil rights and former dignity, there was a difficulty in the restitution of his property. Clodius had destroyed Cicero's house on the Palatine Hill, and dedicated a temple upon the ground to the goddess Liberty. Cicero supported his case in a speech before the college of priests (pontifices), to whose decision the matter belonged, as it was a question that concerned a thing that had been dedicated to religion. The college gave a verdict in terms somewhat evasive; but the senate concluded the matter by a vote in Cicero's favour; and the consuls immediately put the decree into execution by estimating the damage which had been done to Cicero's property. In this estimate his villas near Tusculum and Formiæ were included. Scarcely had the house upon the Palatine begun to rise, when a mob, instigated, according to Cicero, by Clodius, attacked the workmen, and afterwards set fire to the adjoining house, in which his brother Quintus lived. In the same year he gratified his powerful friends Pompeius and Cæsar by appearing as the advocate of L. Cornelius Balbus, a native of Gades, who had received the citizenship of Rome. The legality of his franchise was the subject-matter of the trial. Cicero was at this time closely allied with Cæsar, though he had often abused him; but the fact and the disgrace of it are acknowledged by himself repeatedly in his letters to his friend Atticus. 'It is a bitter pill,' says he, 'and I have been long swallowing it, but farewell now to honour and patriotism.'

In the spring of the following year he commenced the treatise on a Republic, the loss of which the learned had long regretted, when Angelo Maio, in 1823, discovered a considerable portion of it in the Vatican library. During the greater part of the year 54 B.C. Cicero was employed in his usual occupation of defending the accused. 'Not a day passes,' says he, in a letter to his brother, 'without my appearing in defence of some one.' Among others, he defended Messius, one of Cæsar's lieutenants, who was summoned from Gaul to take his trial; then Drusus, who was accused of prevarication, or undertaking a cause with the intention of betraying it; after that, Vatinius, the last year's prætor, and Æmilius Scaurus, one of the consular candidates at the time, who was accused of peculation. His old friend Cn. Plancius, who had received him generously in his exile in Macedonia, being now chosen curule ædile, was accused by a disappointed competitor of bribery and corruption. Cicero defended Plancius in an oration which is extant, and Plancius was acquitted. Cicero's undertaking the defence of Vatinius, who had been always intimately allied with Cæsar, and on that account had on more than one occasion been the object of Cicero's abuse, his personal deformity being a favourite topic of raillery with the orator, at once surprised and offended the aristocratic party.

* We have omitted a mysterious affair which occurred this same year, B.C. 59. The facts are these:—One Vettius, only known to us before this as an informer of Cicero's in the Catilinarian business, and as having endeavoured to implicate Cæsar on that occasion, is arrested as a conspirator against Pompeius's life. He denounces some leading senators, including M. Brutus, as his accomplices, and is thrown into gaol. The next day, being again brought out by Cæsar, he includes Lucullus and Cicero in the charge. That same night he is strangled in gaol. While some declared he had been suborned and then murdered by Cæsar, others believed the charges made by Vettius, and attributed his death to the accused. The authorities are—Cic. *Ad Att.*, ii. 24; *Pro Sextio*, 63; *In Vatin.*, 10; Sueton. *Jul. Cæs.*, 17 and 20; Plutarch, *Lucul.*, 42; Appian, *Bel. Civ.*, 2, c. 12; Dion, 37, c. 41 and 38, c. 9.

They did not conceal from him their disgust, and Cicero found it necessary to make what defence he could of his political tergiversation in a long and ably written letter to his friend Lentulus Spinther, who was then governor of Cilicia ('Ad Fam.' i. 9). He also defended Gabinius, who returned at this time from his government of Syria, and was immediately overwhelmed with public prosecutions. Cicero had not forgotten that Gabinius, as one of the consuls at the time of his exile, had supported his enemy Clodius; and he had openly avowed his opinion of his crimes in Syria. But Cicero's eloquence could not save Gabinius from conviction, fine, and banishment. The speech delivered by Cicero is not extant. There is preserved however the speech made by him on the trial of C. Rabirius Postumus, who had acted as the agent of Gabinius in his dealings with Ptolemæus, the king of Egypt, and he was charged with receiving part of the ten thousand talents which the king had paid Gabinius as the price of his services in restoring him to his throne. On the death of Publius Crassus, who fell in the campaign against the Parthians, B.C. 53, a place became vacant in the college of augurs, which Cicero obtained. In the middle of January, the murder of Clodius by one of Milo's gladiators, in the presence and at the command of his master, caused violent disturbances, which were settled by Pompeius being appointed sole consul (B.C. 52), and Milo being tried. Cicero, who defended Milo, was alarmed at the appearance of the military force which Pompeius had stationed around the court to prevent any violence, and his usual powers failed him. The speech which is found among his works, under the title of the defence of Milo, is very far from being that which he actually delivered. It appears to have been soon after the death of Clodius that Cicero wrote his treatise 'On Laws' (de Legibus), three books of which are still preserved. Among other measures of Pompeius, which were designed to check corruption, was one which disqualified all future consuls and prætors from holding any province until five years after the expiration of their magistracies. But, before the law passed, Pompeius procured an exception for himself, getting the government of Spain and Africa continued to him for five years longer; while, to gratify Cæsar on the other side, Cicero, at the request of Pompeius, induced one of his friends to bring forward a law by which Cæsar's presence might be dispensed with in suing for the consulship in the following year. The result of the law of Pompeius was that Cicero most reluctantly had to undertake the government of Cilicia, with which were united Pisidia, Pamphylia, Cyprus, and three diocéses, as they were called, of the adjoining province Asia. Under these circumstances Cicero was fortunate in having among his lieutenants two such men as his brother and Pontinius. The merits of Quintus Cicero as a soldier had been proved and acknowledged by Cæsar in Gallia.

Cicero's proconsulship in Cilicia belongs to B.C. 51. His general administration appears to have been mild and equitable. He had to resist the importunity of Marcus Brutus, who claimed his assistance in recovering a large sum of money, with interest, from the people of Salamis in Cyprus. He did not however act with perfect fairness in the matter, as he himself admits in a letter to Atticus (v. 21). But Cicero made amends by his just administration for what the province had suffered from the preceding governor Appius. The military operations of Cicero in Cilicia are not worth mentioning, though Cicero was vain enough to hope for a triumph. He left his province near the end of B.C. 50, and found every thing in confusion at Rome on his arrival there in the beginning of B.C. 49. The senate had just passed a decree that Cæsar should dismiss his army, and, when M. Antonius and another tribune opposed their veto to it, proceeded to that vote which gave the consuls and other magistrates a power above all the laws. The tribunes fled to the camp of Cæsar, who, considering this decree as equivalent to a declaration of war, advanced with a rapidity which destroyed all the arrangements of the senate. The consuls fled from Rome, accompanied by Cicero and the leading men of the nobility, in the hope of defending the southern part of the peninsula. Cicero undertook to guard the coast south of Formiæ and the country around Capua; but he abandoned his duty, and finally, after Cæsar returned to Rome from Brundisium, to which place he had pursued Pompeius, Cicero agreed to remain in Italy and be neutral.

When Cæsar proceeded to Spain to oppose the Pompeian troops under Afranius, he left Antonius in command of Italy, with directions to watch the movements of Cicero. Cicero however made his escape from Italy in the early part of June, and met with a cold welcome from the army of the senate. He was not present at the battle of Pharsalia, having stayed behind at Dyrrhachium; and, after the news of the defeat of the Pompeians, he again landed at Brundisium at the end of October, B.C. 48. After much hesitation and great mental trouble, he received a letter from Cæsar, who was in Egypt. When Cæsar landed at Brundisium, B.C. 47, he kindly received Cicero, who followed him to Rome. During Cæsar's African campaign (B.C. 46) Cicero was in retirement. One of the fruits of this leisure was his dialogue on famous orators, called 'Brutus,' in which he gives a short character of the chief orators of Greece and Rome.

He now divorced his wife Terentia, who had lived with him more than thirty years, and almost immediately after married a young ward of his, named Publilia, who was rich. But the match was not a happy one, and he afterwards divorced his second wife. Cæsar returned victorious from Africa in the summer of 46 B.C., and he continued to treat Cicero with distinction. At the end of the year Cæsar was called away to Spain to oppose the sons of Pompeius; and young Cicero was sent by his father to Athens to devote a few years to philosophy and literature. Soon after he had parted from his son, whom he never saw again, he was oppressed by the severest affliction, the death of his daughter Tullia in child-bed.

In this new grief Cicero derived consolation from reading and writing, and he composed a

treatise 'Of Consolation' for himself, which was much read by the fathers of the Christian church, especially Lactantius, to whom we are indebted for the few fragments that remain. He has himself given us a list of the works which he wrote in this and the following year ('De Div.,' ii. 1). The 'Orator' completed his rhetorical works, forming a sort of supplement to his three books entitled 'De Oratore,' and the 'Brutus.' His philosophical writings of this period were the 'Hortensius,' so called in honour of his deceased friend, in which he recommends the study of philosophy; four books in defence of the Academy; five books entitled 'De Finibus,' and addressed to Brutus, in which he contrasts the opinions of the different sects of philosophy on the subject of the chief good; the Tusculan Disputations, in the same number of books, on a variety of points which involve the happiness of human life; three books on the Nature of the Gods; one on Divination, or the art of seeing into futurity; another on Fate; the beautiful treatise on Old Age, and that on Friendship. These were followed by an essay on Glory, which has been lost since the invention of printing; the 'Topica,' addressed to his friend Trebatius; and the 'De Officiis,' dedicated to his son, who was then at Athens. ('De Off.,' i. 1.)

The publication of these works extended over the years 45 and 44 B.C. In the autumn of B.C. 45, Cæsar returned from Spain, and Cicero's intimacy with Cæsar seemed daily to be increasing, when the Ides of March (B.C. 44) changed the whole face of affairs. Cicero was present at the assassination of Cæsar in the senate-house, where he had the pleasure, he says, of seeing the tyrant perish. The conspirators, however, had not thought it prudent to make Cicero acquainted with their design before the murder was accomplished. The result of the assassination was very different from what the conspirators expected. They left the city, and Cicero himself fled as far as Syracuse in Sicily. His further progress was stayed by the news that affairs were in a better condition at Rome; and he returned there on the 31st of August. The senate met next morning; but Cicero, not finding things in the favourable state which he expected, was unwilling to meet M. Antonius. The next day Antonius was absent, and Cicero delivered the first of those orations which he called Philippics. The violence of this harangue committed him with Antonius, and he again retired for security to one of his villas near Naples, where he composed and published the second Philippic, which was full of the coarsest abuse of Antonius. The departure of Antonius for Cisalpine Gaul left Rome again open to Cicero, who returned there on the 9th of December, and ten days after delivered his third Philippic, the chief object of which was to procure the sanction of the senate to the late proceedings of Cæsar Octavianus in opposition to Antonius. Having effected this object, he passed into the forum, and harangued the people upon the same subject in his fourth Philippic. The ten other Philippics were delivered from time to time in the senate or the forum, to excite the people of Rome against Antonius and his friends; but the prospects of the oligarchy were disappointed by the treachery of Octavianus and Lepidus in joining their arms to Antonius, and thus sharing the whole power of the state among them. The proscription which followed, though it can in no way be justified, was levelled against men who had been themselves assassins, or the panegyrists of assassination. Cicero was at his Tusculan villa with his brother and nephew when he received the news of the proscription and of their being included in it. He fled to Astura on the coast, where he embarked and finally landed at Caieta, whence he proceeded to his Formian villa. Hearing of the approach of the soldiers who were in pursuit of him, he attempted to escape; but the assassins, who overtook him, cut off his head and hands, says Plutarch, and, carrying them to Rome, presented them to Antonius, who had them fixed up on the rostra in the forum. Cicero was killed on the 7th of December, in the year 43 B.C. Plutarch's account of his death is the most particular that is extant. ('Life of Cicero.')

The works of Cicero, some of which have been particularly mentioned, have been repeatedly published in mass, as well as separately: perhaps the best edition of his entire writings is that by Orelli. Of his separate works the editions and translations in all European languages are very numerous. Cicero's 'Life,' by Conyers Middleton, is an agreeable work to read, but partial to Cicero. The best materials for Cicero's life are his own Letters to Atticus, and to his Friends, which are the more valuable, as they were not written for publication. The translations of Cicero's writings in English are not of great merit. One of the best is Melmoth's translation of the 'Letters;' but his style is too florid. The French language possesses an excellent translation of the 'Letters to Atticus,' by the Abbé Mongault; and the German language has a still more valuable translation of all the 'Letters' in chronological order, by Wieland, with notes, and a number of historical chapters, in which however the author shows an undue partiality for Cicero.

CICERO'NE, a name given by the Italians, especially of Naples and Rome, to the guides who show travellers the antiquities of the country.

CICHORA'CEÆ, one of the primary subdivisions in the system of Jussieu, of the natural order *Compositæ*. The plants included under this division by Jussieu belong to De Candolle's *Liguliflorœ*. They produce a milky juice, possessing in some species powerful medical properties. This juice has a bitter and astringent taste, and possesses narcotic properties. It is found in the *Cichorium Intybus*, the common Succory, and in the cultivated and wild Lettuce. From the latter plants the juice has been obtained under the name of Lactucaricum, and used as a narcotic, instead of opium. Many of the species secrete starch in large quantities, and are used as articles of diet, as the Endive, Scorzonera, Tragopógon or Salsafy, &c. The root of the Dandelion is used as a tonic and purgative, and has been recommended in diseases of the stomach.

CICINDE'LIDÆ, a family of coleopterous in-

sects of the section *Adéphaga*, and subsection *Geodéphaga*. The *Cicindelidæ* are carnivorous terrestrial insects, active, and voracious. They are divided into two sections:—1st, Those in which the emargination of the mentum is furnished with a tooth or pointed process in the middle. 2nd, Those in which this process is wanting. To the first section belong the genera *Manticora*, *Platycheile*, *Megacephala*, *Oxycheila*, *Iresia*, *Cicindela*, *Dromica*, *Euprosopus*, and *Ctenostoma*. To the second section belong the genera *Therates*, *Tricondyla*, and *Colliurus*.—Typical genus, *Cicindela*, containing upwards of 200 species. The colouring of these insects is generally rich and metallic; they are very active, and are generally found on sandy plains or heaths, sometimes on the sea-shore, or the shore of rivers.

CICISBE'O, in Italian, means a gallant, a man who courts the ladies. The term is also applied to a knot of ribands, which used to be worn appended to the hilts of swords or to the handles of fans. ('Dizionario della Crusca.') In like manner a cicisbeo is a man who hangs upon a lady, is constantly by her side and at her beck, and attends her wherever she goes. This derogatory custom is losing ground of late years. The words *cavaliere servente* and *patito* are also used in the same sense.

CICOGNA'RA, COUNT LEOPOLD, was born at Ferrara, Nov. 26, 1767. While yet a youth he made considerable proficiency in mathematics and physics, whereby he recommended himself to the notice of Spallanzani, Scarpa, and many other eminent individuals of the university of Pavia. Having completed his course of studies he visited different parts of Italy for some years, and at Palermo he published his first literary effort, a poem, entitled 'Le Ore del Giorno.' In 1795 he fixed himself at Modena, and during the twelve following years appears to have given much of his attention to public affairs, having been for some time minister at the court of Sardinia. He resigned his post in 1808, when he was made president of the Academy of the Fine Arts at Venice. From this epoch in his life may be dated the commencement of his career as a writer, during which he enriched the branch of literature just mentioned by many important works. In that same year (1808) he published a treatise on 'The Beautiful' (*Il Bello*). This was succeeded by his great work, 'The History of Modern Sculpture' (*Storia della Scultura dal suo Risorgimento in Italia al Seco'o di Napoleone*), in three folio volumes, the first of which appeared in 1816, and the last in 1818. It is undeniably a performance of great research and erudition, bringing down to the present century the history of the art from the point at which it had been left by D'Agincourt, who himself had taken it up where Winckelmann had quitted it.

His next publication was a catalogue *raisonné*, in two thick 8vo. volumes, of his own library, an immense collection of works in every department of the fine arts. He likewise produced a work entitled 'Memorie per servire alla Storia della Calcografia.' The two splendid architectural volumes, entitled 'Le Fabbriche più Cospicue di Venezia,' appeared in 1815-20, of which the greater share of the literary part and the chief conduct of the work belong to him, although he was assisted in it by Diedo and Selva.

He died at Venice, of a disease of the lungs, March 5, 1834, and was buried in the cathedral of St. Mark.

CICONIA. [HERONS.]

CICU'TA VIRO'SA, or *Water Hemlock*, is a wild poisonous plant of the Umbelliferous order, found occasionally by the sides of ditches and ponds. Its medicinal properties are similar to those of common hemlock, but more energetic. Its roots have been mistaken by children and country folks for parsnips, and have been eaten with fatal consequences.

CID, THE (from the Arabic *El Seid*, 'the Lord'), so called by the Moors of Spain, whom he subjugated by his victories, was born at Burgos, somewhere about 1040. His real name was *Rodrigo Diaz de Bivar*. He attached himself to Sanchez II., king of Leon and Castile, whose life he once saved in battle. Sanchez having been treacherously slain, the Cid insisted on his brother and successor, Alfonso, taking an oath of his innocence of his brother's murder. The life of the Cid was a continued series of combats with the Moors, who occupied by far the largest and richest parts of the country. He fell upon them in Aragon, established himself there, and then extended his conquests to Valencia. After a long siege he took Valencia, the capital city, and held it until his death, which happened about 1099.

The adventures of the Cid, form the subject of some of the most interesting of the ballad poems of Spain. They are of course largly intermixed with fable.

An ample notice of these different works will be found in Mr. Southey's *Chronicle of the Cid*, 1 vol. 4to., 1808.

CIDER, or CYDER, a word used to signify the juice of apples expressed and fermented. The Hereford cider district is comprised in the four counties of Hereford, Gloucester, Worcester, and Monmouth; the Devonshire cider district in those of Devon, Dorset, Somerset, and Cornwall.

The principal kinds of apple used in these districts for cider are the New Foxwhelp, the Wilding, the Cherry Pearmain, and Yellow and Red Norman. In the Devonshire district, the situations chosen for orchards are generally hollow dells or shelving banks, in the neighbourhood of the farm-houses, the land on which they are planted being put to little other use; while in the Herefordshire district the choice is determined chiefly by the quality of the soil, without reference to the position of the farm-house. Very little attention is paid to enriching the soil round the trees when once they have been planted. In by far the largest proportion of orchards, with the exception of gathering the fruit, nothing is done to the trees from the beginning of the year to the end. The fruit of the different varieties of apple ripen at different times of the year, earlier or later, according to the season. The customary method of picking the fruit is by striking the

trees with poles, provincially called 'poulting,' and then gathering the fallen apples; but it is better economy to pay a small extra price for collecting the fruit which falls at several times. When the apples have been gathered, each sort by itself is collected into heaps, about ten inches deep, where they remain for a month, or more, until they become mellow; they are then ready for the mill.

Cider is manufactured with very rude machinery, by the following process:—The apples are thrown into a circular stone trough, usually about eighteen feet in diameter, called the *chase*, round which the *runner*, a heavy circular stone, is turned by one or two horses. The crushed pulp or *must* is pressed between horse-hair cloths, and the juice expelled. This juice is poured into casks, placed either out of doors, or in sheds where there is a free current of air. In about three or four days the liquor ferments; the thick heavier parts subside as a sediment at the bottom of the cask, and the lighter becomes bright clear cider. This is then *racked*, or drawn off into another cask.

The fermentation of cider is a process requiring great care and skill. *Slight* fermentation will leave the liquor thick and unpalatable; *rapid* fermentation will impair both its strength and durability; *excessive* fermentation will make it sour, harsh, and thin. It is not the habit of the farmer to add sugar, treacle, brandy, or any colouring matter to the liquor; it is only adulterated in the hands of cider dealers and publicans, who often 'doctor' up sour cider to make it palatable.

At the beginning of January the cider is moved into cellars, where by large growers it is frequently stored in casks of great capacity, containing 1000, 1500, or even 2000 gallons. In March the liquor is bunged down; it is then fit for sale, and may be used soon afterwards, though it will greatly improve by keeping.

Cider of good quality is made in Ireland, in the counties of Waterford and Cork; in Normandy, whence we have many of our best apples; in Belgium; and of inferior quality in Germany. It is also made in abundance, and of excellent quality, in many parts of the United States of North America.

CIGAR. [TOBACCO.]

CIGNA'NI, CARLO, was born at Bologna, May 15, 1628. Carlo, who showed an early taste for painting, was put under Giambatista Cairo, and afterwards under Albani. He subsequently enlarged his style of painting by a careful study of the works of Correggio and Annibal Carracci, from whom he learned the art of giving size and space to his pictures, by means of a powerful and skilful use of chiaroscuro.

Being invited to paint the Duomo of Forli, his chief work, he removed thither with his family, and resided there for the remainder of his life. In 1708, when the Clementine Academy was instituted, Cignani was elected president. He died Sept. 6, 1719, leaving two sons, one of whom, Felice, was a painter.

CIGNAROLI, GIAMBETTI'NO, one of the most distinguished of the Italian oil painters of the eighteenth century, was born at Salo, near Verona, in 1706. There are several excellent works in oil by Cignaroli, in Verona, Pontremoli, Pisa, and at Parma. In the last-named place there is a Journey into Egypt, in the church of Sant' Antonio Abate, much praised by Lanzi.

Cignaroli lived chiefly at Verona, where he educated a numerous school, and he died there in 1770, possessed of considerable wealth.

CI'GOLI, LUDOVICO CARDI DA, Cavaliere, a Florentine painter, was born at Cigoli, in 1559. He was one of the great reformers of style of the Florentine school, and one of those masters whose works formed an epoch in the history of painting in Tuscany.

Cigoli was the scholar of Santo di Titi; but his style was founded upon the works of Barroccio and Correggio, and had much in common with the eclectic school of the Carracci. His chief productions are large altar-pieces, some of which are considered the finest pictures in Italy. The Lame Man healed by St. Peter, in St. Peter's at Rome, painted for Clement VII., is a very celebrated work, though now destroyed. There is also at Florence a Martyrdom of St. Stephen, at the Nuns of Monte Domini. The Lame Man Healed has been engraved by Dorigny, Callot, and Scacciati. Cigoli was also an architect, and wrote a practical treatise upon perspective, 'Prospettiva Pratica di Ludovico Cigoli Cav. e Pittore,' with diagrams engraved in copper by his brother Bastiano Cardi. Cigoli died at Rome, in 1613, shortly after the completion of some frescoes painted for Paul V., in that Pope's chapel in the church of Santa Maria Maggiore.

(Baldinucci, *Notizie dei Professori del Disegno*, &c.; Lanzi, *Storia Pittorica*, &c.)

CI'LIA, in Anatomy, small moving organs found on the surface of the tissues of most animals, resembling hairs, and requiring the use of the microscope to be distinctly observed. They are mostly found on tissues which are in contact with water, or which produce fluid secretions. They are constantly in a state of active movement, and impart to the fluid with which they are in contact the same motion. This is called 'vibratory' or 'ciliary motion.' The best time for observing cilia with the microscope is when their movement begins to slacken. Their figure is generally that of slender conical or sometimes flattened filaments, which are broad at the base or root, and gradually taper to the point. Their size differs greatly on different parts of the same animal, measuring from $\frac{1}{50}$ to the $\frac{1}{1000}$ of an inch in length. The substance of the cilia is for the most part transparent and colourless; in some however a slight colouring may be observed. They assume also various forms, and Ehrenberg has described compound cilia in the Infusoria. In the Ciliograde Medusæ the cilia consist of rows of broad flattened organs, each of which is made up of several simple filaments joined together by a connecting membrane throughout their whole length. In most cases the cilia are arranged in regular order. On the gills of the mussel they are placed in straight rows; in many of the Infusoria they are arranged in circles or spiral lines. In some

instances they are erect, but in others they are placed at right angles to the surface on which they are seated.

The movement of the cilia is not very rapid, and may be easily observed with a lens of $\frac{1}{3}$ inch focus. Their most obvious movement is of a fanning lashing kind, the cilium being bent in one direction and returning to it again. In addition to this they have another movement which resembles the *feathering* of an oar in rowing.

The cilia were first observed as present on the external surface of the bodies of infusory animalcules. Leeuwenhoek seems to be one of the earliest observers who described the presence of the cilia in animalcules. Since the period at which he wrote, they have been observed in almost every species of Infusoria, and seem to be the active organs by means of which these animals move from place to place, and carry their food into their stomachs. In the polypes they are found in great numbers, covering the surface of the tentacula by which these animals obtain their food. Although they have not been observed on the full-grown sponges, they exist upon the ova of these animals before they become fixed. They are found in the Acalephæ, in the various forms of the Echinodermata, and also in the Annelida. In the Mollusca they are very abundant, and one of the best means of examining these organs is afforded by the common mussel. Till within a recent period, it was supposed that cilia were confined to the invertebrate classes of animals, or at least the observation of their existence to any extent in the Vertebrata was very limited. One of the earliest observations of their presence in vertebrate animals was by Steinbuck, a German anatomist, who found them upon the gills of the salamander. Within the last few years Purkinje and Valentin have devoted much attention to the subject, and have found that cilia exist very generally on the moist surfaces of the membranes of all the higher animals. The systems of organs on the surface of which cilia have been detected are—1, the surface of the body; 2, the respiratory system; 3, alimentary system; 4, reproductive system. The function of these organs seems to be to produce motion in the fluids with which they are in contact, although fluids move upon membranes where there are no cilia.

CILICIA, a country of Asia Minor, forming part of Anatolia. The ancient boundaries were, on the north, the Taurus, which separated it from Cappadocia and Lycaonia, on the south the Mediterranean Sea, on the east Mount Amánus, which separated it from Syria, and on the west Pamphylia. Cilicia anciently comprised two divisions, the names of which were derived from their physical character. The west division was called Mountainous or Rough Cilicia, and the east division, Level Cilicia. For our information on the geography of Cilicia we are chiefly indebted to Strabo (book xiv.), and Beaufort's survey of the line of coast as far east as the Gulf of Issus (Scanderoon). With the interior we are very little acquainted. The principal towns which are known are on the coast. Level Cilicia is described as fertile.

The first town in Mountainous Cilicia, on leaving Pamphylia, was Coracesium. The modern name is Alaya; it is a strong natural fortress, situated on a high and almost insulated rock. Selínus is situated on a steep hill. After the Emperor Trajan died here, it was called Trajanópolis: the modern name is Selinty. Cape Anemurium (now Anamour) is the most southern point of Asia Minor. The ruins of Seleuceia are many miles from the shore, on the west side of the river Calycadnus (Ghiuk Sooyoo), which now flows into the sea a few miles east of Cape Zephyrium (Beaufort's 'Karamania,' p. 226). The shore presents a line of noble promontories and white marble cliffs rising perpendicularly from the sea. This rocky character diminishes a few miles west of Seleuceia, where the high lands begin to recede from the coast; and at the river Latmus (now Lamas), which was the boundary of Mountainous Cilicia, the rocks and cliffs cease, and are succeeded by a gravelly beach and broad plains.

The principal towns in Level Cilicia were Soli, Tarsus or Tarsi, and Issus or Issi. Soli was afterwards called Pompeiópolis, because Pompeius settled the remains of the pirates there. Tarsus, anciently one of the most celebrated cities in Asia Minor, still bears a respectable rank: its modern name is Tersoos. Tarsus was the birthplace of the Apostle Paul, and a school for the study of philosophy and the arts. It stood in a plain on the banks of the Cydnus, now called the Tersoos River. The Cydnus has undergone a great change from the deposits carried down from the mountains (Beaufort, p. 265). Issus is situated in the extreme eastern part of the plain of Cilicia, at the head of the Issic Gulf, called the Gulf of Scanderoon. The river Pýramus (the modern Jyhoon), between Tarsus and the plain of Issus, has brought down such a quantity of sand and earth, that the outlet of the river has been diverted twenty-three miles from its ancient course (Beaufort, p. 275).

When Cilicia became one of the Persian satrapies, it continued to be governed by native kings, subject to the Persian empire. It became a Macedonian province on the downfal of the Persian Empire. Seleucus and his descendants, after the death of Alexander, held the sovereignty till Pompeius reduced the level country to a Roman province.

CILIOGRADA, an order of the class *Acalephæ* (Jelly Fish, Sea-Nettles). The ciliograde acalephæ are transparent gelatinous animals, spread through all seas, and moving by the agitation of myriads of minute cilia, with which they are provided. It is in this circumstance chiefly that the groups agree, for in external form they differ greatly from each other. The principal genera are *Beroe, Cydippe, Callianira, Mnemia, Calymna, Axiotima Eucharis, Ocyröe, Alcynöe,* and *Cestum.*

CIMABUE, GIOVANNI, was born at Florence, in the year 1240, of a noble family. While studying at the convent of Santa Maria Novella, some Greek artists came to ornament the convent church with paintings. He devoted his attention to watching them, and soon became noted as one

of the best painters of the day. His fame having spread abroad, he was invited to adorn the church of St. Francis at Assisi. He painted part of the walls in concert with certain Greek painters; but being recalled to Florence by private affairs, and obliged to leave his work uncompleted, it was afterwards finished by Giotto. After his return to Florence, among other pictures he painted a Madonna for the church of Santa Maria Novella. Cimabue was engaged as an architect, in conjunction with Arnolfo Lapi, to build the church of Santa Maria del Fiore; but he died shortly after, in the year 1300.

Cimabue's right to be considered as the restorer of the art has been warmly urged, and as warmly contested. He put life into the heads and into the action of his figures, abandoning the cold straight lines of his Greek instructors. He is supposed to have been the first to recur, after a long interval, to the study of nature, and to have drawn from the living model, though but sparingly.

He worked in fresco and distemper, oil painting being a later discovery. Some of his works still exist; the principal are in the church of Santa Maria Novella at Florence, and that of St. Francis at Assisi. (Vasari; Lanzi.)

CIMARO'SA, DOMENI'CO, was born at Naples in 1754. He studied music under Aprile and Durante. He published thirty operas, of which the most celebrated was 'Il Matrimonio Segreto,' which made him a great favourite at the Austrian court. In 1787 Cimarosa was invited by the Empress Catherine to St. Petersburg, where he produced three operas. He returned to Naples; but political disturbances drove him to Venice, where he died in 1801.

Cimarosa excelled most in comic opera, but his 'Orazi e Curiazi' proves that he could compose well in a different style. He is the link which unites the old and modern schools, his scores exhibiting an instrumentation much stronger than that of Paisiello, though inferior in vigour and richness to that of Mozart.

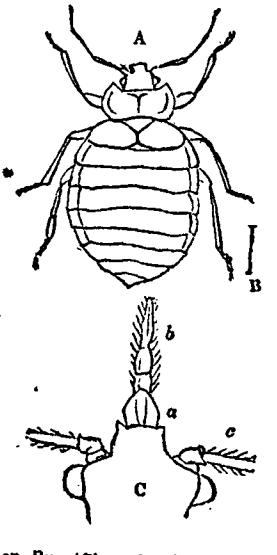
CIMBEX, a genus of hymenopterous insects of the section *Terebrantia*, subsection *Securifera*, and family *Tenthredinidæ*. The genus Cimbex, as it formerly stood, has been subdivided, principally by Dr. Leach, into the following subgenera:—*Cimbex, Perga, Syzygonia, Trichiosoma, Clavellaria, Zarea, Abia,* and *Amasis*. All these subgenera have the antennæ short, and terminated by thickened joints, which are nearly of an oval form; the third joint of the antennæ is long, forming a knob; the superior wings have two marginal and three submarginal cells. Mr. Stephens enumerates eight British species of the restricted genus Cimbex; it is probable however that some are only varieties.

CIMBRI, or KIMBRI, the name given by the Roman and Greek historians to a vast multitude of people who came from the northern parts of Germany at the same time as the Teutones, crossed the Rhine, and entered Gaul, where they joined the Ambrones, a Celtic tribe, and, after ravaging and plundering part of Gaul, went into Spain, where they were repulsed by the Celtiberi. The Teutones and Ambrones were defeated by Marius, 102 B.C., at Aix, in the south of France. Another body of Cimbri was again defeated by Marius and Catulus, B.C. 101, in Italy, north of the Po. Of the original country of the Cimbri we know nothing certain. The peninsula of Jutland has been called Chersonesus Cimbrica, without however it being proved that the Cimbri ever inhabited it.

CIMEX. [CIMICIDÆ.]

CIMI'CIDÆ, a family of hemipterous insects, the species of which may be distinguished by their having the rostrum short and consisting of two or three joints only; the labrum also short, and without striæ; the eyes are moderate; the body is generally very much depressed. The principal genera are *Cimex, Aneurus, Aradus, Agramma, Tingis,* and *Dictyonota,* all of which are found in England. The genus *Cimex* is distinguished principally by the extreme slenderness of the two terminal joints of the antennæ, which are not thicker than a hair. The body is very much depressed; the thorax is transverse; antennæ four-jointed; basal joint very short, second long, the third of about equal length, the fourth rather shorter. Labrum rather long, somewhat pointed, and, when the proboscis is not in use, recurved under the head; proboscis three-jointed, and, when at rest, lies along the under side of the thorax, its apex being between the two forelegs at their base.

There are said to be two or three species of this genus. We have however never had an opportunity of examining any but the common Bug (*Cimex lectularius*), of which an account is given under the head Bug. We have here added an outline drawing to show its structure; for, although it is too common an insect, it is seldom examined except by the entomologist.



A, Common Bug (*Cimex lectularius*) magnified; B, natural length of do.; C, head of do. highly magnified; *a*, the labrum; *b*, the proboscis; *c*, base of the antennæ.

CIMICI'FUGA, a genus of plants belonging to

the natural order *Ranunculaceæ*. The species are perennial herbs, with divided leaves and racemes of whitish flowers; the roots act as drastic purgatives, and are poisonous. *C. fœtida*, Stinking Bugwort, is a very fetid plant, and is used in Siberia for driving away bugs and fleas, just as tansy and wormwood are used in this country. *C. serpentaria*, Black Snake Root or Bugwort, is a native of North America, from Canada to Florida. Like many other plants possessing active properties, it has a reputation in America for healing the bites of snakes and preventing their poisonous effects on the system. There is one species, *C. Japonica*, a native of Japan; the rest are American plants. They are easily cultivated, preferring a moist shady situation, and may be propagated by dividing the roots or by seeds.

CIMOLITE, a hydrous silicate of alumina; gray, soft, opaque, and with a specific gravity of 2.0.

CIMON, the name of two Athenians, one the father (Herod. vi. 34), and the other the son of Miltiades. Cimon, the son of Miltiades and Hegesípyle, was born about 502 B.C. Miltiades died in prison, and Cimon had to pay the fine which had been imposed on his father. Cimon's youth was passed without distinction, and his education was somewhat neglected. There was nothing showy about him. He seems to have excelled rather in doing than in talking about doing. Aristides was one of the few who discerned in him the elements of a great character.

Cimon first distinguished himself at the capture of Eion, on the Strymon, B.C. 476. This town was occupied by a Persian garrison under Boges, who after a desperate defence destroyed himself (Herod., vii. 107; Thucyd., i. 98.) Cimon's next victory was at the island of Scyros, which he seized under the pretence that it had been guilty of piracy. He planted a colony of Athenians there, and divided the land amongst them. (Thucyd., i. 98.) But Cimon's most important victory was at the Eurýmedon in Pamphylia, B.C. 466, where he sunk or took 200 Persian ships, and carried away prodigious booty from their tents on the banks of the river. He next drove the Persians from those parts of Thrace which they still occupied. Twice he led a force to assist the Lacedæmonians, B.C. 464 and 461, at the siege of Ithóme. Towards the end of the same year (B.C. 461) in which they returned from Ithome, Cimon was banished for ten years by ostracism. In B.C. 457 there was a battle between the Lacedæmonians and Athenians, at Tanagra in Bœotia. Cimon presented himself to fight on the side of the Athenians, but he was not allowed to remain: the Athenians were signally worsted. In the fifth year of his banishment he was recalled. In B.C. 450 a five years' truce between the Athenians and Lacedæmonians was concluded through the intervention of Cimon. In B.C. 449, he was appointed to the command of a fleet of 200 vessels, which sailed to assist the Egyptian king Amyrtæus. He sent on a squadron of sixty galleys to the aid of Amyrtæus, and with the rest besieged Citium in Cyprus, where he died, either from illness or from a wound. The Athenians were forced by want of provisions to raise the siege of Citium. On their homeward voyage they defeated a fleet of Phœnician and Cilician ships near Sálamis in Cyprus.

The slender private fortune to which Cimon succeeded had been considerably augmented by his Persian victories, and especially by the recovery of his patrimonial estates in Thrace. He did not use his acquisitions for personal aggrandisement. Many of the splendid improvements which he made in Athens were effected at his own cost. He changed the Academy from a barren, uncultivated field to a shady and pleasant grove, and planted the A'gora, or Public Place, with planetrees.

(Plutarch and Nepos, *Lives of Cimon*;—Thirlwall's *Greece*, vol. iii. pp. 1-36.)

CI'NADON. [AGESILAUS II.]

CI'NCHONA, a genus of monopetalous exogens, the different species of which have a great reputation in medicine. It constitutes the type of a natural order CINCHONACEÆ.

By whom the important properties of the various species of this genus were first made known to Europeans is unrecorded. The native Peruvians attached no febrifugal importance to the bark. Its introduction to Europe took place through the Spaniards in the year 1640. Little was known of the tree producing this substance till the voyage of La Condamine, who, in 1738, first printed a detailed account of *Quinquina*, as it was then called.

The manner of collecting the Cinchona bark of commerce is thus described:—In the month of April the preparations for an expedition commence; and in May the people start for the forest, whence the last green bales are transmitted home in November. They fell the trees close to the root, sparing those trunks which appear too young, as, till they have attained maturity, the bark is of no value. The next process is to divide the stems into pieces of uniform length, rejecting only the very smallest branches. The bark is then cut lengthwise, so as to remove the rind without injuring the wood or severing any of the fibres. In a few days the bark is taken off in strips as broad as possible. In the market the value of the bark depends on the celerity with which it is dried. In the dense forests it is impossible to perform this operation properly, and therefore the bundles of green bark are despatched with all speed to the nearest inhabited place, where the person appointed to take the charge of them is stationed. They are laid in a spot exposed to the full action of the sun, and the greatest care is requisite to protect them from the wet.

Books and memoirs without end have been written to determine the different species of Cinchona that yield the barks of commerce, but with very little result. To pretend to reduce to their botanical species, in the existing state of knowledge of Cinchona barks, all the varieties that are known in shops or in commerce, would be a vain and hopeless task. There is not a chest of bark which, although called of one sort, has not probably been furnished by many different species; and there is much reason to believe that many of the best known sorts of barks of the shops are in

reality furnished by the same species under different circumstances.

In the following enumeration of the species, we take De Candolle as our guide in the systematic distinctions of the species, and Humboldt and Pöppig principally for the practical observations upon them.

1. *Cinchona Condaminea* is one of the sorts imported in quantity to Europe, and is said to furnish the pale bark of the English apothecaries.

2. *C. scrobiculata.* In the quality of the bark this is not distinguishable from *C. Condaminea.* In commerce it has the name of *Quina fina.*

3. *C. lancifolia,* next to *C. Condaminea,* is accounted the most efficacious of all the species. It furnishes the orange-coloured bark, or the *Quina naranjonda* of Santa Fé de Bogota. Humboldt states that it prefers an inclement climate, on mountainous declivities, from 4000 to 9000 feet high, where the mean temperature is about that of Rome. In the Alpine forests of the upper limits of the zone inhabited by this species, the thermometer falls for hours as low as the freezing point.

4. *C. pubescens* is a most valuable plant, yielding what is called yellow bark. It is found in the kingdom of New Granada, in 4° N. lat., at heights between 5400 and 8650 feet; it has the name of *Quina amarilla.*

5. *C. purpurea* is a native of the Peruvian Andes. The bark of this species is not in much esteem; but, as it is readily collected, it can be sold at a low price, and is used for adulterating other sorts.

6. *C. macrocalyx* is found on the mountains of Peru: nothing is known of its sensible properties.

7. *C. Humboldtiana* forms forests in the province of Cuenca, in Peru: in commerce it is called *Cascarilla peluda,* which signifies velvet-leaved quina. Its bark is not in much estimation; it is however a good deal collected for mixing with other sorts, and Bonpland suspects it to be of good quality.

8. *C. magnifolia* has a woody, not very astringent bark, and is chiefly used for purposes of adulteration.

9. *C. macrocarpa* is the white bark of Santa Fé. The tree grows between 3° and 6° N. lat., at heights between 4200 and 8400 feet.

10. *C. crassifolia* is found about Quito and Loxa.

11. *C. dichotoma* is found on the Andes of Peru. Its bark is brown and intensely bitter, with a little acidity.

12. *C. acutifolia* is a native of the lower woods of the Andes of Peru. The bark is moderately bitter.

13. *C. micrantha,* a species inhabiting the cold elevated parts of the Andes of Peru, especially about the village of San Antonio de Playa Grande. The inhabitants call its bark *Cascarilla fina.* Its taste, which is at first acid, becomes afterwards a powerful and permanent bitter.

14. *C. glandulifera.* This tree only inhabits the higher mountains of Peru, and is more scarce than many of the other kinds. Its trunk is from 12 to 15 feet high, and its flowers, in the month of February, fill the forests with their perfume; on the colder parts of the mountains it becomes a bush. It is, according to Pöppig, one of the finest sorts of Cinchona.

Cinchona barks, in England, are classed under three heads—pale, yellow, and red barks. Of each there are several varieties, which comprehend however various barks, not the produce of any of the genuine species of Cinchona above enumerated, but obtained from species of *Exostemma, Buena,* and *Strychnos.* The most useful classification of barks is that proposed by Geiger, which has reference to the relative proportions of their alkaloids: — 1, Those in which cinchonia predominates; chiefly pale or brown barks: 2, Those in which quinia predominates, of which there is only one—the yellow bark of English commerce, called *China regia vera, China calisaya:* 3, Those in which cinchonia and quinia exist in nearly equal proportions, red barks, and the yellow bark of continental writers, *China flava dura, Quina amarilla.*

Of the *Pale Barks,* three varieties are known in English commerce:—1, Crown or Loxa Bark; 2, Gray, Silver, or Huanuco Bark; 3, Ash Bark. These are always quilled, and never in flat pieces. The powder, which gives the name, varies from gray to fawn colour.

1. The first variety, Loxa or Crown Bark, is obtained either exclusively from the *C. Condaminca,* or from it and *C. scrobiculata.* It occurs in pieces from 6 to 14 inches long, the quills varying in diameter from the fourth or even smaller part of an inch to nearly half an inch. The colour of the exterior is marked dark gray, in some specimens verging to brown. The odour resembles that of tan. The taste at first is slightly astringent, and faintly acid; afterwards very astringent somewhat bitter, but not acrid.

2. The variety called Huanuco Bark, termed from its colour Silver or Gray Cinchona, has been known in European commerce only since 1799. The majority of writers on the origin of the barks refer it to the *C. glandulifera.* As it is sent from Huanuco to Lima for shipment, it is also called Lima Bark. Pöppig considers it one of the finest sorts of Cinchona.

3. The third kind of pale bark, called Ash, Jaen, or by corruption Ten Bark, is by Von Bergen referred to *C. ovata,* which he considers synonymous with the *C. pubescens.* The bark is of an ash gray, whitish gray, or light yellow colour, with brown or blackish spots.

The *Yellow Barks.* — There are only three kinds; the Yellow Bark of English commerce, which by continental writers is called *China regia, China calisaya.* The source of the Yellow Bark of English commerce must be considered as yet undetermined. It occurs in two forms—quills and flat pieces; the quills were formerly most prized, but all well-informed persons now prefer the flat pieces as much richer in quinia. The external surface is generally grayish brown, inclining to blackish, yellow, or whitish, according to the kind of lichen by which it is beset. The flat Yellow Bark, or that in splints, occurs either with the epidermis or divested of it (*China regio nuda*).

Adulteration of Yellow Bark is not very easy. The odour of genuine bark is slightly that of tan. The taste is faintly acid, strongly but not unpleasantly bitter, aromatic, stimulating, and slightly astringent.

The *Red Bark*, of which one kind only is known in English trade, is generally referred to *C. oblongifolia*, though many doubts may be held on this head. Red Bark has been known for 130 years, but was not much used in Europe till 1779. It occurs in quills and flat pieces, most frequently in the latter form.

Several inferior kinds, and others erroneously reputed to be Cinchona barks, are met with, either accidentally or fraudulently mixed with or passed for the genuine.

The various forms of Cinchona Bark are justly considered the most valuable tonic and febrifugal medicines we possess. The forms of administration are numerous. Powder is objectionable from its bulk; infusion is a good form, but does not possess all the virtues of the bark. Decoction, if the process be long continued, dissipates the volatile or aromatic portion, and diminishes its powers. The tincture is often formed by the addition of other substances, as in the compound tincture of bark. Acids or ammonia are sometimes given along with it, according to the nature of the complaint.

The ease with which a small dose can be taken of the sulphates of quinia or cinchonia has led to the substitution of these preparations for that of the bark itself; and in many cases they are more eligible.

CINCHONA'CEÆ, a natural order of monopetalous exogens. This order includes a most important assemblage of plants, comprehending many of the most useful species we are acquainted with. The bark of the order is very generally tonic, aromatic, and febrifugal, and its energy is attested by the well-known use of that of Cinchona itself, to say nothing of the numerous other genera fit to be employed as substitutes for Jesuit's Bark. The albumen of the seeds when roasted affords, in the case of coffee, a fragrant, stimulating, and agreeable principle; and the roots of many herbaceous kinds possess active emetic properties. True Ipecacuanha is the produce of *Cephaelis Ipecacuanha*, but many other cinchonaceous plants resemble it in their medicinal qualities, and are perhaps mixed with it in commerce.

CINCHONIA, a vegetable alkali contained in all the varieties of Cinchona, but principally in the *Cinchona lancifolia*, or pale bark. Cinchonia has a peculiar bitter taste. It is very soluble in alcohol, especially when heated, and, when saturated at a boiling heat, crystals are formed on cooling; the alcoholic solution is extremely bitter. It is less soluble in æther than in alcohol, and hardly soluble at all in water. It crystallises by evaporation. It consists of C^{20}, H^{11}, O^1, N^1.

Sulphate of Cinchonia is colourless; unalterable in the air at common temperatures; but when the temperature is raised, or the air is very dry, it becomes slightly opaque; it effloresces when exposed to a gentle heat. *Disulphate of Cinchonia* crystallises in rhombic prisms, which are usually short. It is soluble in about 54 times its weight of water. Cinchonia also forms salts with the nitric, muriatic, and kinic acids.

CINCHOVATINA, a vegetable alkali discovered in *Cinchona ovata*. It is insoluble in water, but dissolves in alcohol; and the solution yields large colourless inodorous prisms.

CINCINNATI, a city, and port of entry, in the state of Ohio, in North America, is situated in 39° 6′ N. lat., 84° 27′ W. long., on the north bank of the Ohio, about 20 miles from the south-western angle of the state, where the Miami falls into the Ohio.

Cincinnati was founded in 1789, by emigrants from New England and New Jersey. In 1795 it contained 500 inhabitants; in 1840 it contained 46,338, in addition to which there is a floating population, estimated at from 2000 to 3000.

The city is built on two plains; that which is farthest from the river is fifty or sixty feet higher than the one in front; and the total rise of the ground from low-water mark on the Ohio is 108 feet. The streets, except on the margin of the river, are regularly laid out, and intersect each other from south to north, and from east to west. The streets are wide, most of them well paved, and several are shaded with trees. The houses are generally of stone or brick. The chief public buildings are, the court-house, surmounted by a dome 120 feet high; the Franklin and Lafayette Banks, with a handsome portico of eight Doric columns; 4 market-houses; Cincinnati College; Woodward High School; St. Xavier College; the Cincinnati Lyceum; the Athenæum; the Mechanics' Institute; the theatre; two museums; the Medical College; the Lunatic Asylum; and between 40 and 50 churches, belonging to various denominations of Christians. The city is divided into 7 wards, and is governed by a president, a recorder, and 21 councillors.

Many manufactures are carried on in Cincinnati. Water-power is deficient, but it is extensively supplied by steam. Machinery is manufactured in large quantity, as well as hardware and cutlery, leather, woollen goods, and a variety of other articles. There are 7 daily papers, 8 weekly papers, and several magazines and other periodicals.

The shore of the Ohio forms a good landing-place, and much of it is substantially paved, and supplied with floating wharfs, which are rendered necessary by the great rise and fall of the water at different seasons. The burthen of the vessels of the port, chiefly steam-boats, in 1840, amounted to 12,052 tons.

The Miami Railroad extends from Cincinnati to Springfield, 85 miles. The Miami Canal extends 178 miles northwards to Defiance, where it joins the Wabash and Erie Canal, thus forming a continuous line of water-communication, between Cincinnati and Lake Erie, of more than 200 miles.

(Haskel and Smith, *Gazetteer of the United States.*)

CINCINNA'TUS. When Cincinnatus was chosen consul, it is said that the messengers sent to acquaint him with his election found him engaged in the labours of agriculture, and that he

left his farm with reluctance. In his consulship he restored tranquillity to the city. The senate wished to continue him in office, but he retired to his rural occupations. But in B.C. 457 he was chosen dictator, and, forthwith marching against the Æqui, he gained a signal victory, entered Rome in triumph, and abdicated the dictatorship on the sixteenth day after he had received it. He afterwards headed an army against the Volsci, and added another to his former victories. A second time he was chosen dictator, when he was above eighty years of age. In all the posts which he filled at different times, his virtue and probity, as well as his patriotism and military success, gained him general admiration. (Niebuhr's *History of Rome*, vol. ii. p. 286, &c., Engl. trans.)

CINCIUS. L. CINCIUS ALIMENTUS, and his contemporary *Fabius Pictor* were the oldest of the Roman annalists. Alimentus is frequently mentioned by Livy (xxi. 38, xxvi. 23, &c.).

Cincius was actively engaged during the occupation of Italy by Hannibal. He was quaestor, B.C. 219, tribunus plebis, B.C. 214, and plebeian ædile, B.C. 212. After Marcellus had taken Syracuse, and left Sicily, Cincius held that province for two years as prætor (Livy, xxvi. 28, xxvii. 7), in B.C. 210 and B.C. 209. He afterwards fell into the hands of Hannibal, from whom he learned some facts as to the war (Livy, xxi. 38). Cincius wrote a history of Rome from the foundation of the city to his own time, of which Dionysius says that he treated minutely of the events with which he was personally acquainted, but in a summary way of the events which followed the foundation of the city. Neither the title of his work nor the number of books is known. The work of Cincius was written in Greek.

The fragments of Cincius are printed in Krause's *Vitæ et Fragmenta Veterum Historicorum Romanorum*, Berlin, 1833.

CINERA'RIA, a genus of plants belonging to the natural order *Compositæ*. Two species are found in Great Britain, *C. palustris* and *C. campestris*.

CINNA, LU'CIUS CORNE'LIUS, a Roman patrician. In 87 B.C. he obtained the consulship with Octavius, who made a strenuous opposition to his proposal for recalling Marius from banishment. A dispute followed between the consuls which was attended with bloodshed; and Cinna withdrew to Tibur, Prænestę, and other neighbouring towns, to seek for aid. By thus leaving his post he resigned his office, and another consul, L. C. Merula, was appointed in his room. Cinna, with Marius, Carbo, and Sertorius, now advanced to Rome, and the Senate came to terms, and opened the city to him (B.C. 87). Cinna was reinstated in the consulship, and Marius was re-admitted as a Roman citizen. The entry of Cinna and Marius was followed by great slaughter of the partisans of Sulla. Cinna and Marius were elected consuls for B.C. 86, but Marius died on the first day of his entering on the office. Upon this, Cinna chose for his colleague Valerius Flaccus.

When Sulla had brought the Mithridatic War to a close, he made preparations to return to Italy to punish his enemies. The Senate endeavoured to appease Sulla. They also attempted to moderate the fury of Cinna, but he persisted in prosecuting the war. In B.C. 84, Cinna was consul for the fourth time with Papirius Carbo. Cinna prepared to oppose Sulla, and intended to meet him in Thessaly, by which route it was supposed he would return to Italy. The troops however were reluctant to embark, and an attempt to force them ended in a mutiny, in which Cinna was killed. C. Julius Cæsar married Cinna's daughter Cornelia.

(Appian, *Civil Wars*, i.; Velleius Paterculus, ii. 19—24; Plutarch's *Lives of Marius and Sulla*.)

CINNA, CORNELIUS, a grandson of Pompeius, headed a conspiracy against Augustus, who pardoned him and made him consul.

CINNABAR. [CALAMUS; MERCURY.]

CINNAMOMIC ACID. When oil of cinnamon is exposed to oxygen gas, the gas is absorbed, and the result is the cinnamomic acid. It is colourless; boils at 560° Fahr.; distils without alteration; it is soluble in alcohol, and is slightly soluble in water. It is composed of oxygen, hydrogen, and carbon.

CINNAMO'MUM, an important genus of *Lauraceæ*, confined to the East Indies. It contains several species, some of which yield cinnamon, and others cassia, two aromatic barks which appear to differ from each other in little, except in the degree in which the aromatic principle exists in them.

Cinnamon has been known to European nations from very high antiquity. The Greeks received it, together with the name, as Herodotus (iii. 111) remarks, from the Phœnicians. That which is now chiefly consumed in England is the aromatic bark of a small tree found in the island of Ceylon. There are many contradictory statements about cinnamon and cassia. According to Nees von Esenbeck, the finest or Ceylon cinnamon is procured from the three-year old branches of the *Cinnamomum Zeylanicum*, which is found native in the island of Ceylon only; the cultivation however has been extended to Java and elsewhere. Though found in various parts of the island, it is most abundant in the south-west part, near Colombo, and yields the best cinnamon when growing in a sandy quartz soil. The time for stripping off the bark is from May to October. The bark, after being removed from the branches, is tied up in bundles for twenty-four hours, during which time a sort of fermentation takes place, which greatly facilitates the separation of the outer part of the bark from the cuticle and epidermis, which is very carefully scraped off the Ceylon cinnamon. It is then rolled up into quills, or pipes, about three feet in length, the thinner or smaller quills being surrounded by larger ones, a mark which always distinguishes cinnamon from cassia. It is then conveyed to Colombo, where it is sorted by government inspectors into three kinds, of which the two finest alone are allowed to be exported to Europe, while the third, or inferior kind, is reserved to be distilled, along with the broken pieces of the other two, for the purpose of obtaining the oil of cinna-

mon. The select cinnamon is formed into bales of about 92½ lbs. weight, containing some pepper or coffee, and wrapped in double cloths made of hemp.

This fine cinnamon occurs in pieces about forty inches in length, generally containing from six to eight rolls or quills in each, one within the other, of the thickness of vellum paper, of a dull golden yellow colour. It is very fragrant, agreeably aromatic, taste pleasant, warm, aromatic, slightly astringent. Analysed by Vauquelin, it yielded volatile oil, tannin in large quantity, an azotised colouring matter, a peculiar acid, mucilage, and feculum.

The root of the cinnamon tree yields a kind of camphor, and the leaves yield an oil which resembles oil of cloves, which it is often used to adulterate. This is quite distinct from the oil of cinnamon obtained from the bark. The ripe berries yield by decoction a solid volatile oil, similar to the oil of junipers.

Cassia, according to Marshall and others, is the bark of the old branches and trunk of the *Cinnamomum Zeylanicum*, while others assert that it is the bark of an entirely different species, the *Cinnamomum Cassia*, a native of China, but cultivated in Java. This last view is much the most probable; for not only is no cassia exported from Ceylon (except the rejected or third sort of cinnamon, which is introduced into England incorrectly under that name), but almost all the cassia which reaches Europe comes from Canton.

Cassia is easily distinguished from cinnamon. The bales in which it arrives are much smaller, containing only from two to four pounds, bound together by portions of the bark of a tree. The quills are thicker, rolled once or twice only, and never contain thinner pieces within; the diameter of the bark is much thicker than that of cinnamon, and harder, and the outer rind less carefully removed. It has the odour of cinnamon, but fainter and less grateful; the taste more acridly aromatic, pungent, less sweet, at the same time more powerfully astringent, yet mucilaginous.

Oil of cinnamon is obtained chiefly from the fragments which fall from the quills during the inspection and sorting at Colombo. These fragments are coarsely powdered, and, after being immersed for forty-eight hours in sea-water, are distilled, when a milky fluid comes over, which separates into two parts, a light oil which floats on the water, and a heavy one which sinks. As the oil which is met with in commerce is a mixture of these two, the specific gravity is variable, 1.035 to 1.090. In time a spontaneous separation takes place, and there are formed transparent crystals of a *stearopten*, or cinnamon-camphor. Oil of cassia is also obtained by distillation; at first it is whiter than oil of cinnamon, afterwards it becomes yellow, but never of such a fiery yellow as cinnamon-oil. The odour is agreeable, but not so delicate; the taste, acrid, burning, but different from cinnamon. Specific gravity, 1.0608.

Oil of cinnamon is adulterated with oil of cassia; with the oil of cassia-buds; with the oil of the *Cérasus laurocerasus*, or cherry-laurel; and it is also said with oil of bitter almonds, an exceedingly dangerous intermixture.

Cinnamon is an extremely valuable aromatic stimulant, and influences both the nervous and vascular system, especially of the stomach and intestine. It is of great utility in weakness of the digestive powers, unaccompanied with inflammatory action of the stomach; while in fluxes from atony of the intestines, its astringent properties, due to the tannin, render it a very useful medicine. Oil of cinnamon, given on sugar, is useful in cramps and other spasmodic diseases. Cassia has the same properties in less degree.

CINNAMON. [CINNAMOMUM.]

CINQUE-CENTO STYLE. [RENAISSANCE.]

CINQUE-MARS. [INDRE-ET-LOIRE.]

CINQUE PORTS. It is stated by Jeake ('Charters of the Cinque Ports'), that 'the five ports were enfranchised in the time of King Edward the Confessor;' the five ports here intended, the original *Cinque Ports* of the Normans, being the towns of Sandwich, Dover, Hythe, and Romney, on the coast of Kent, and Hastings on that of Sussex; but only three of these five ports are mentioned in the Domesday Survey, viz. Sandwich, Dover, and Romney.

The Conqueror severed the district of the Cinque Ports wholly from the civil and military administrations of the counties of Kent and Sussex, erecting it into a kind of palatine jurisdiction, under a *gardien*, or *warden*, who had the seat of his administration at the castle of Dover, and who exercised over the whole district the combined civil, military, and naval authority.

To the five ports of the Conqueror's time were added, before the reign of Henry III., with equal privileges, what were called the *ancient towns* of Winchelsea and Rye, lying on the Sussex coast, between Hastings and Romney. To each of these seven municipal towns, except Winchelsea, were attached one or more subordinate ports or towns, denominated *members* of the principal port.

The members of these corporations were styled *jurats* (by the Norman constitution twelve in each town), from whom were chosen the mayor and bailiffs. And the term *Barons* was applied to the Cinque Ports' representatives.

Until the time of Henry VII. the crown appears to have had no permanent navy: the Cinque Ports constantly furnished nearly all the shipping required for the purposes of the state, and their assistance to the king's ships continued long after that time. When ships were wanted, the king issued his summons to the ports to provide their quota. In the time of Edward I. the number they were bound to provide was fifty-seven, fully equipped, at their own cost: the period of gratuitous service was limited to fifteen days.

Each of the five original ports returned two barons to parliament as early as the 18th of Edward I. In the 20th of Charles II. the first open blow was struck by the crown at the liberties of the Ports, in the provision of Charles's charter of that year, by which the elections of all their recorders and common clerks were made subject to the royal approbation. Subsequently, in 1685, all the general charters of the Ports, and most of the particular charters of each individual town, were, by the king's special command, delivered

up to Colonel Strode, then constable of Dover Castle, and were never afterwards recovered.

Before the Revolution in 1688 the lord-wardens assumed the power and the right of nominating one, and sometimes both, of the members for each of the Port-Towns having parliamentary representation; but this practice was terminated by an act passed in the first year after the Revolution, entitled 'An Act to declare the Right and Freedom of Election of Members to serve in Parliament for the Cinque Ports.'

The jurisdiction of the Cinque Ports collectively extends along the coast, continuously, from Birchington, which is west of Margate, to Seaford in Sussex. But several of the corporate members are quite inland. Tenterden, in the centre of a rich agricultural district, has not even a river near it. Many of the unincorporate members are not only inland, but situated at great distances from their respective ports, some as far as from forty to fifty miles. All the unincorporated members being exclusively under the jurisdiction of their own ports, each of those members was obliged to have recourse to the justices and coroner of its own port. This inconvenience was partially removed by 51 Geo. III. c. 36, entitled 'An Act to facilitate the Execution of Justice within the Cinque Ports.'

The Parliamentary Reform Act of 1832 worked a considerable revolution in the political relations of the Cinque Ports, and the Municipal Reform Act has operated yet more decidedly to break up the ancient organisation of the ports, and assimilate their internal arrangements to those of the improved English municipalities at large.

Anciently there were several courts, exercising a general jurisdiction over all the ports and members. The Court of Shepway was the supreme court of the Cinque Ports. The lord warden presided in it, assisted by the mayors and bailiffs and a certain number of jurats summoned from each corporate town. Two other ancient courts are still occasionally held, the Court of Brotherhood and the Court of Guestling; but they are now almost mere forms.

It remains to notice more particularly the nature of the lord warden's jurisdiction as now exercised. All writs out of the superior courts are directed to the constable of Dover Castle, who is always the lord warden; upon which his warrant is made out, directed to and executed by an officer called the *bodar*. This officer, by a curious anomaly, has also the execution of writs out of the distant civil court at Hastings; and the necessity of having recourse to him has been a source of inconvenience and dissatisfaction to the latter town. The clerk of Dover Castle acts as under-sheriff. The constable's gaol for debtors is within Dover Castle; and, by Act 54 Geo. III. c. 97, their maintenance was provided for by an annual contribution of 300*l*., to be levied on the ports and members in proportions fixed by the act.

The Admiralty jurisdiction of the Cinque Ports, attached to the office of lord warden, is expressly reserved in the Municipal Reform Act. A branch of this jurisdiction appears in the court of Lodemanage, so called from the old English word *lodeman*, a *lead*-man, or steerer, which is held for the licensing and regulating of pilots, by the lord warden and a number of commissioners, of whom the mayors of Dover and Sandwich are officially two.

(Jeake's *Charters of the Cinque Ports*, &c.)

CINTRA. [ESTREMADURA.]

CIONE, ANDREA DI. [ORCAGNA.]

CIONUS, a genus of coleopterous insects, of the section *Rhyncophora* and family *Curculionidæ*.

Schoenherr, in his 'Synonymic Insectorum,' links the present genus with the genera *Gymnætron*, *Mecinus*, and *Nanodes*, under the head *Cionides*, which may be considered as a subfamily. Four species of the genus *Cionus* are found in England; they live both in their larva and imago states upon plants, more especially those of the genera Scrophularia and Verbascum.

CIOTAT, LA. [BOUCHES-DU-RHONE.]

CIPOLIN, a variety of green marble with white zones, found in the vicinities of Rome and Autun.

CIPRIA'NI, GIOVANNI BATISTA, was born at Florence in 1727. He received his first instruction from Heckford, an English artist. In 1755 he came to England, where he settled. He was one of the original members of the Royal Academy, and was presented with a silver cup by that body in return for the design for their diploma, which he furnished. He died Dec. 14, 1785. Cipriani executed few paintings. He employed himself chiefly in drawing designs, of which Bartolozzi engraved a great number.

CIRCÆA, a genus of small herbaceous plants, found in woods and shady places. The species are commonly called Enchanter's Nightshade; but whatever supposed properties may have given rise to this name are purely imaginary.

CIRCARS, or *Northern Circars*, a province of Hindustan lying between 15° and 20° N. lat., and 80° and 86° E. long., and extending along the western side of the Bay of Bengal, from the Chilka Lake on the north to the river Gondegama on the south. It is bounded N. by the district of Cuttack, S. by the Carnatic, E. by the Bay of Bengal, along a line of coast extending 470 miles, and W. by Orissa and Hydrabad. The average breadth of the province is about 80 miles, and its area about 38,000 square miles. It is included in the presidency of Bengal. The population has been estimated at from 4,000,000 to 5,000,000. The province is watered by several small rivers, which rise among the continuous range of hills which forms the greater part of the western frontier, and which flow into the Bay of Bengal. The large rivers Godavery and Kistna likewise cross the province, and fall into the Bay of Bengal.

The climate of the Circars exhibits a general uniformity. About the middle of June the westerly wind sets in, accompanied by moderate showers, until the end of August, when the harvest of the small grains is secured. From the beginning of September to the end of the following month the wind is generally violent, and as November approaches changes to the north-east, when the rice harvest is housed. The season is then fair and pleasant, and at the vernal equinox the maize harvest commences. The season be-

tween the end of March and the setting in of the rains in the middle of June is hot, but the temperature is somewhat moderated by the sea breeze during the day. Fruits and garden vegetables are scarce. Sugar, cotton, and tobacco, are produced. The forests upon the hills to the west contain abundance of teak wood of large growth. At the principal mouths of the Godavery shipbuilding is carried on. From the nature of the country a great part of its trade is prosecuted in coasting vessels.

The Circars are politically divided into seven districts—Chicacole, Condapilly, Ellore, Ganjam, Guntoor, Rajahmundry, and Vizagapatam. The district of Chicacole forms the largest portion of the collectorate of Ganjam. Exclusive of mountain streams, which are numerous during the rainy season, Chicacole is watered by four rivers, the mouths of which are at the towns of Chicacole, Calingapatam, Bimlipatam, and Vizagapatam. The town of Chicacole is in 18° 15′ N. lat. and 84° E. long. It is a large town, irregularly built on rising ground, on the north bank of the Chicacole River, which rises in the mountains of Gundwana and joins the sea 3 miles below the town, where it is about 1750 feet broad. There are numerous mosques in the town. Condapilly is separated from Ellore and Rajahmundry by the salt-water river Ooputair, which is navigable by boats as far as the Colair Lake, the surplus waters of which it carries off to the sea. The town of Condapilly, the capital of this district, stands in 16° 37′ N. lat. and 80° 33′ E. long.; it was formerly a fortress of some strength, but the works are now in ruins. The district of Ellore and district of Condapilly occupy the whole of the territory of the province comprehended between the Kistna and the Godavery. The town of Ellore, situated in 16° 43′ N. lat. and 81° 15′ E. long., is large; and the houses, none of which exceed one story in height, are built with some regularity. Guntoor district lies between the Kistna and the Gondegama. The soil is very fertile. Luxuriant harvests of maize are raised. Guntoor, the chief town, situated in 16° 17′ N. lat. and 80° 32′ E. long., is an extensive but irregularly built town, the walls of the houses being of mud, and the roofs of many thatched. The district of Rajahmundry lies on both sides of the Godavery, but principally on the north side of that river. The soil is fertile, particularly the island of Nagarum, a triangular space, comprehending an area of 500 square miles, which is formed by two great branches, into which the Godavery divides itself, 35 miles from the sea. Sugar, rice, ginger, turmeric, and various leguminous plants, are raised. Cotton is also generally cultivated, but the quality is not good. The capital Rajahmundry is on the east bank of the Godavery, about 50 miles from its mouth, in 16° 59′ N. lat. and 81° 53′ E. long. The town is long but narrow, extending along an elevated bank adjoining the river. During the dry season the Godavery is here a clear blue stream, exhibiting many islands and shoals, and the banks on both sides are from 20 to 30 feet high; but in the rainy season the stream is a mile broad and very deep. Vizagapatam district, which lies to the north of Rajahmundry, is mountainous; a lofty ridge runs parallel to the sea-shore, and frequently within a very short distance of it, through nearly its whole extent; to the westward of this ridge is another chain; the intermediate space is a narrow and well-cultivated valley. The town of Vizagapatam lies on the coast in 17° 42′ N. lat., and 83° 24′ E. long., near to a promontory called the Dolphin's Nose, a mountain about 1500 feet high. The town contains a considerable number of well-built houses, but the situation is unhealthy for Europeans.

The Circars were among the earliest of the territorial possessions of the East India Company. They were granted in August 1765, by the Mogul Shah Allum, 'by way of free gift, without the least participation of any person whatever in the same.'

(Rennell's *Memoir of a Map of Hindustan; Report of Committee of House of Commons in* 1832 *on the Affairs of India.*)

CIRCASSIA, or the country of the Circassians, is situated along the northern declivity of Mount Caucasus, and is now understood to comprehend the whole of this tract, from the shores of the Black Sea to the vicinity of those of the Caspian. [CAUCASUS.] The rivers Terek and Kooban, as far as their courses lie east and west, are considered as constituting the northern boundary; and the highest part of the Caucasian chain forms the southern. The whole of this country is a succession of mountain-ridges, which branch off from the northern side of the Caucasus, and terminate near the rivers Terek and Kooban, and of valleys which lie between them. The valleys are very fertile, and generally of considerable width; they contain numerous narrow passes, which render the access to them very difficult to an invading enemy, but tend to foster those predatory habits for which the inhabitants are notorious, and which render them the scourge of travellers and of their neighbours in the plain. The Russians, though acknowledged masters of the country, are not able to prevent their hostile excursions; and there are constant wars between the two nations. There are many small Russian fortifications on the banks of the rivers. There is a Moravian mission at Karas.

There are no towns in Circassia, the habits of the people being opposed to the concentration of a great number of houses or of people on one spot. They live in small villages, the site of which is frequently changed. They raise millet and barley, and in some places also wheat and rye, with a small number of vegetables. The rearing of cattle is more attended to. Their horses are of a fine breed, and equally strong, swift, and beautiful; the people are proud of them, and, like the Bedouins, preserve the genealogies of their breed. The sheep, which are of the broad-tailed kind, are also much esteemed. The cattle are of a small kind. Milk, with millet, forms the principal food of the inhabitants, and they make of it an inebriating beverage, the *koomiss*. As they are Mohammedans, they do not rear swine. Hunting is only followed by the noblemen as a diversion.

The Circassians, or Cherkess, are the most nu-

merous of the different nations that inhabit this country. They consist of about a dozen tribes, independent of one another, and governed by their own hereditary princes and hereditary nobility. Their internal government resembles the feudal system. The whole population is estimated at 220,000. To the east of the river Sunja live the Midszeges, also called Kistes and Tchetchenzes, who are said to be in number about 160,000. They differ entirely from the Circassians in language, but not much in character. They seem to occupy the whole of the range to its very summits. The Ossetes, or, as they call themselves, Irones, occupy the higher part of the mountain-range east of Mount Kazbeck, and consist of about 40,000 persons. West of them are some smaller tribes; but the most western portion of the Caucasus is inhabited by the Avkhasas or Abasas, who occupy both the southern and the northern declivity, and are said to be about 240,000 in number. In their country is the small town of Anapa, on the Black Sea, which is fortified, has a small harbour, and about 3000 inhabitants.

(Pallas; Reineggs.)

CIRCENSIAN GAMES. [CIRCUS.]

CIRCINUS, the Compasses, a constellation of Lacaille, below Centaurus, and not very far from the South Pole.

CIRCLE (*circulus*, a little circle, from *circus*, a ring), the figure formed by a point which revolves in a plane surface, and always preserves the same distance from a given point. The points of view under which this word might be considered are with reference, first, to its properties as a figure of geometry; second, to the history of the researches which were made for centuries, in order to discover the exact ratio of the circumference to the diameter [QUADRATURE OF THE CIRCLE]; third, the effect of the properties of the circle upon several branches of mathematics.

The word circle is sometimes used to denote the *circumference* or boundary line, sometimes the inclosed figure or area. Frequently a point *in* a circle means a point on the circumference; but a point *within* a circle always means a point in the interior. The *centre* is the point from which all the *radii* drawn to the curve are equal; a diameter is a double radius.

To find the circumference of a circle (with more than sufficient nearness for practical purposes), take the 113th part of 355 times the diameter, or 3.14159 times the diameter. To find the area in *square* units, multiply the number of units in the radius by itself, and take the 113th part of 355 times the result (or multiply by 3.14159).

CIRCLE, ASTRONOMICAL. Though almost all the astronomical and geodesical instruments which are at present used in measuring angles are composed of entire circles, the term *astronomical circle* is ordinarily confined to those instruments of which the sole or principal use is the measurement of angles of altitude or zenith distance. For a full account of the astronomical circle, under this limitation, see *Penny Cyclopædia*.

CIRCLE, QUADRATURE OF THE. [QUADRATURE OF THE CIRCLE.]

CIRCLES OF DECLINATION, ALTITUDE, &c. The use of these terms is not very well settled. According to some, a circle of declination would mean the parallel of any declination, or the small circle all whose points have the same declination; that is, a parallel to the equator. According to others, it would mean the circle on which declination is measured, that is, a *horary* circle passing through the poles. And the same of the other circles. Perhaps the latter sense is the more generally used; but in all cases the student must be aware of the difference when he consults a book on the doctrine of the sphere.

CIRCUITS (from the French *circuit*, which is from the Latin *circuitus*, 'a going about') are the periodical progresses of the judges of the superior courts of common law through the several counties of England and Wales, for the purpose of administering justice in civil and criminal matters. The ordinary circuits take place in the spring and summer of each year. [ASSIZE.]

Since the Statute 11 Geo. IV. & 1 Will. IV. c. 70, by which the ancient Welsh judicature was abolished, the circuits of the judges are eight in number, and the counties of England and Wales are distributed among them in the following manner:—

The Northern Circuit comprehends the counties of York, Durham, Northumberland, Cumberland, Westmoreland, and Lancaster.

The Western Circuit comprehends the counties of Southampton, Wilts, Dorset, Devon, Cornwall, Somerset, and Bristol.

The Oxford Circuit comprehends the counties of Berks, Oxford, Worcester, Stafford, Salop, Hereford, Monmouth, and Gloucester.

The Midland Circuit comprehends the counties of Northampton, Rutland, Lincoln, Nottingham, Derby, Leicester, and Warwick.

The Home Circuit comprehends the counties of Hertford, Essex, Kent, Sussex, and Surrey.

The Norfolk Circuit comprehends the counties of Buckingham, Bedford, Huntingdon, Cambridge, with the Isle of Ely, Norfolk, and Suffolk.

The South Wales Circuit comprehends the counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon, and Radnor.

The North Wales Circuit comprehends the counties of Montgomery, Merioneth, Carnarvon, Anglesey, Denbigh, Flint, and Chester.

Ireland is divided into the North-East Circuit, the North-West Circuit, the Home Circuit, and the Leinster, Connaught, and Munster Circuits.

Scotland is not divided into Circuits. Assizes are held twice a year in Aberdeen, Inverness, Perth, Ayr, Dumfries, Jedburgh, Glasgow, Inverary, and Stirling: at Glasgow they are held three times a year.

The total number of towns in which assizes are held is, in England, 66; Ireland, 34; and Scotland, 9. In many counties, especially in England, the assizes are held alternately at two different towns of the county.

The Commissioners of Insolvent Debtors make circuits thrice a year throughout England and Wales, for the purpose of discharging insolvent debtors. There are four circuits, corresponding with the number of commissioners.

The Romans used to divide their provinces into districts, and to appoint certain places, at which the people within the several districts used to assemble at stated times for the purpose of having their disputes settled by legal process, and transacting other business which required certain legal forms. These places were called Conventus, 'meetings,' a word which properly signified 'the act of meeting,' and the assembly or people who met; and the term 'Conventus' was also used to express the jurisdiction exercised by the governor at such district courts, and also the districts themselves.

CIRCULAR PARTS (Napier's), a proposition which generalises the relations between the parts of a spherical right-angled triangle into two only; first given (with a demonstration) by Napier.

CIRCULAR POLARISATION, in the undulatory theory of light, is the name given to a supposed circular rotation of the particles of æther in certain media, when a pencil of plane polarised light [POLARISATION OF LIGHT] is allowed to pass through those media.

It was a discovery made by M. Arago, that when a pencil of light, polarised by reflection or refraction, is transmitted through a plate of quartz in a direction parallel to the axis of the crystal (the surfaces of incidence and emersion being perpendicular to that axis), and is afterwards allowed to pass through a prism of any doubly refracting material, it is divided into two coloured pencils, whose tints are complementary to each other; and, on turning the prism round on the polarised ray as an axis, the colours of the pencils undergo changes successively, according to their order in the solar spectrum.

Now, imagining the position of the prism to be such that one of the two images formed by the pencils is of a violet colour, let the angle between the plane of primitive polarisation and the principal section of the prism be remarked; then, if the quartz be removed, and a thicker plate of the same material be substituted for it, the image transmitted as before will not be of a violet colour; but, on turning the prism upon the polarised ray as an axis, that colour will at length be reproduced: the angle between the plane of primitive polarisation and the principal axis of the prism will be greater than before; and it will be found that it is proportioned to the thickness of the plate of quartz. The like holds good for all the different homogeneous pencils; but the angle of rotation by which the same tint is produced differs with the different kinds of light. The angle of rotation is also variable with different kinds of quartz; and M. Biot discovered that, while in some specimens, in order to produce the same tint when the thickness of the plate was increased, the refracting prism must be turned from left to right, in others it must be turned from right to left.

The like rotatory polarisation was discovered, about the same time, by M. Biot and Dr. Seebeck, in several liquids and even in vapours; but, in all, the angular movement of the planes, to reproduce the same tint, is less than in quartz.

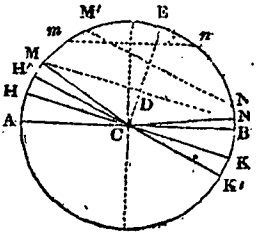
The phenomena were by M. Fresnel ascribed to an angular movement of the plane of polarisation, arising from a circular motion of the particles of æther within the quartz. He found by experiment that a pencil of polarised light, in being transmitted along the axis of quartz, becomes divided into two pencils, moving in the same direction with unequal velocities; and he assumed that the particles in each performed their vibrations in straight lines parallel to one another, the lines in one pencil being perpendicular to those in the other, while the planes of vibration are perpendicular to the common axis of the pencils. He conceived also that the vibrations in one pencil differ in phase (positions of the particles in the lines of vibration) from those in the other by a quantity which is due to one quarter of the time of making an entire vibration. Now, by the principles of the undulatory theory of light, the distance of a vibrating particle from the axis of the pencil, at a given time, is expressed by the product of the whole extent of a vibration by the side of an angle depending on the time; and a difference of phase corresponding to a quarter of a vibration is denoted by a difference equal to 90 degrees in the angle: hence a being the whole extent of a vibration, while x and y represent the distances of two particles, at the same instant, from the axis, in their respective lines of vibration, we have, by trigonometry,

$$a^2 = x^2 + y^2$$

which proves that two particles, while performing vibrations at right angles to one another, are always in the circumference of a circle of which a is the radius.

It is further assumed that, on emerging from the quartz, the two pencils become four, all moving in the same direction; the vibrations in two of these differing in phase by a quarter of a vibration, and producing a circular motion from right to left, while the vibrations in the two others, with a like difference of phase, produce a circular motion from left to right.

The angular motion of the place of polarisation may now be thus explained. Let a particle, in its circular motion from left to right, set out from A, and a particle, in its motion from right to left,



set out at the same time from B: the velocities being unequal, and that of the particle which sets out from A being the greatest, let M and N, unequally distant from A and B, be the positions of the particles at the time of emergence. Join M, N, and from C the centre draw CE bisecting MN at right angles in D; then, if the equal lines CM, CN represent the equal attractions exercised on a particle at C, these forces may be

resolved into MD, DC, and ND, DC, of which MD and ND, being equal and acting in contrary directions, destroy one another, and the resulting attraction is such as will create a vibratory motion in CE: in this case a plane passing through the diameter HK perpendicular to CE and to the circle will be the plane of polarisation at the given time. But, in proportion as the plate of quartz is thicker, M′ and N′ being the points of emergence, the ratio of AM′ to BN′ at the time of emergence will be greater than of AM to BN; and the plane of polarisation passing through H′K′ parallel to M N′ will make with AB an angle greater than BCK: thus the plane of polarisation will seem to revolve about a line passing through C perpendicularly to the plane of the circle. The above explanation is, in substance, that which is given by Sir John Herschel.

The velocities of the particles in air being by supposition constantly equal, two points as *m* and *n* in a line parallel to AB would be the points of emergence; and the plane of polarisation would constantly pass through AB.

CIRCULATING DECIMALS. When a common fraction cannot be expressed exactly as a decimal, the attempt leads to a never-ending series of figures, any number of which, with the decimal point properly placed, is an approximation to the common fraction, and the more near the greater the number of figures taken. Thus 1, with ciphers affixed and divided by 7, leads to the recurring or circulating series

14285714285714285714 .....

and .1428 is nearly $\frac{1}{7}$, but .14285714 much more nearly. Hence it is said that $\frac{1}{7}$ is a circulating decimal whose period is 142857, and is denoted by .$\dot{1}4285\dot{7}$. Similarly .$\dot{1}2\dot{9}$ denotes .129999.... and .0$\dot{5}3\dot{6}$ denotes .053636..... As a part of practical arithmetic, the rules for converting these fractions into common fractions are useless, though found in most elementary works.

CIRCULATION OF THE BLOOD. The organ by which the blood is carried into the system is described under HEART. The history of the discovery of the circulation of the blood is given under HARVEY. The principal facts which are relied upon by physiologists as establishing the circulation of the blood are as follows:—

1. With the microscope, in the transparent parts of animals the blood can be seen in motion; and, if its course be attentively observed, its route may be clearly traced.

2. The membranes in the heart and vessels termed valves are so placed as to allow of the freest passage to the blood in one direction; while they either altogether prevent or exceedingly impede its movements in any other direction.

3. The effect of a ligature placed around a vein and an artery, and of a puncture made above the ligature in the one vessel, and below it in the other, demonstrates both the motion of the blood and the course of it. When a ligature is placed round a vein, that part of the vessel which is most distant from the heart becomes full and turgid, on account of the accumulation of blood in it; while the part of the vessel which is between the ligature and the heart becomes empty and flaccid, because it has carried on its contents to the heart and it can receive no fresh supply from the body. When, on the contrary, a ligature is placed round an artery, that portion of the vessel which lies between the ligature and the heart becomes full and turgid, and the other portion empty and flaccid. This can only be because the contents of the two vessels move in opposite directions—from the heart to the artery, from the artery to the vein, and from the vein to the heart. At the same time, if the vein be punctured above the ligature, there will be little or no loss of blood; while, if it be punctured below the ligature, the blood will continue to flow until the loss of it occasions death; which could not be unless the blood were in motion, nor unless the direction of its course were from the artery to the vein, and from the vein to the heart.

4. If fluids be injected into the veins or arteries, whether of the dead or the living body, they readily make their way and fill the vessels, if thrown in the direction stated to be the natural course of the circulation; but they are strongly resisted if forced in the opposite direction.

CIRCUMCISION. Abraham, as recorded in Genesis (xvii. 10-15), by the command of God, circumcised himself and all the males of his household. The rite of circumcision was ordained to be an everlasting covenant between God and the seed of Abraham; and it was declared that 'the uncircumcised man-child whose flesh of his fore-skin is uncircumcised, that soul shall be cut off from his people; he hath broken my covenant.' All the males that left Egypt were circumcised, but during the forty years' wandering in the wilderness the rite was not performed. Joshua, by the express command of God, renewed it by circumcising all the males just after the passage of the Jordan. (Joshua, v.) Ever since the circumcision by Joshua, it has been observed both among the Jews and the Ishmaelitish descendants of Abraham. Circumcision is not enjoined in the Koran, but it is as universal among the Mohammedans as it is among the Jews.

The prevalence of circumcision among various ancient nations is mentioned by Herodotus (ii. 36, 37, 104), by Diodorus Siculus (i. 26 and 55, iii. 32), and others. Herodotus says that the Colchi, the Egyptians, and the Ethiopians, were the only nations who had practised it from time immemorial, and that the Phœnicians and the Syrians of Palestine (the Jews) admitted that they had acquired the custom from the Egyptians. Circumcision has been used in the islands of the modern Archipelago, in Madagascar, and elsewhere.

CIRCUMFERENCE (*circum* and *fero*), the line which goes round a figure. We do not know why, but this word is generally applied to a curvilinear figure; while the synonymous Greek word periphery (περιφερεία) is more commonly used for a rectilinear figure.

CIRCUMFERENTOR. This instrument is a species of surveying compass, consisting of one circular plate of brass, graduated, and of another turning on the same axis, which carries a vernier;

these are supported on a tripod stand, and may be rendered horizontal by means of small spirit-levels. The upper plate carries two sight-vanes or perforated plates in vertical positions, at the opposite extremities of a diameter, and through these an object is seen when the *bearing* of a station line from the magnetic meridian is to be found.

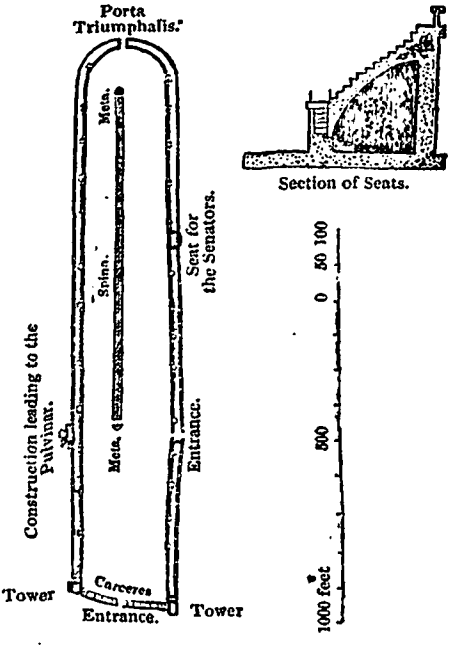
Such an instrument, being far inferior to a theodolite in respect of the accuracy with which by its means a survey may be made, is not much used in Europe; but in the United States of America and in the British colonies, where land is less valuable, it is almost the only instrument employed. [SURVEYING.]

CIRCUMFLEX. [ACCENT.]

CIRCUS, a large inclosed space adapted for chariot races, an amusement to which the Romans were passionately attached. The name Circus (of which Circulus, a *circle*, is a diminutive) does not convey an exact idea of the form of this building, which both in its outline and its use very much resembled the Greek Stadium. There were many circi in Rome, of which the Circus Maximus and the Circus Agonālis were perhaps the largest. The former may still be distinctly traced; the latter retains its external form only in the Piazza Navona of Rome. The Circus Aurelianus, or, according to some, of Heliogabalus, stood near the Amphitheatrum Castrense. The ruins of the Flaminian Circus are hid beneath the pavement of the city. The Circus of Nero was begun by Caligula; part of its site is now occupied by the Basilica of St. Peter. This circus is said to have been longer than the cathedral and colonnade in front. (Fontana's 'Tempio Vaticano,' p. 245.) Another circus, begun by Nero and finished by Hadrian, was situated in the gardens of Domitia, near the Mausoleum of Hadrian. Several antiquities and paintings were discovered here a few years ago. In the gardens of Sallust there was a fine circus, which was also adapted for the exhibition of naumachiæ, or representations of sea-fights.

The Circus of Caracalla, of which we have given a plan and a section of the seats, may be considered a perfect model of this kind of building. The long sides are not quite parallel: one end is semicircular, and the carceres at the opposite end, from which the chariots started, are formed on a segment of a circle, the chord of which is inclined to the long sides of the circus. The spina, or raised division, which runs along the middle of the circus, is a kind of pódium or basement, in appearance like a thick dwarf wall. It is not exactly parallel to either side of the circus. Of the carceres, which are twelve in number, six are placed on each side of the entrance which was intended for the use of the processions, and are so disposed, by the inclination of the chord line of the segment on which they may be said to be set off, that the starting of the twelve chariots was equalised. The carceres were most probably covered; they were also divided by partition walls with terminal figures in front of them, and arched over, with a cornice above the arches; the semicircular opening was filled with a window frame of marble, highly enriched; and they were closed with gates, probably of bronze.

Plan of the Circus of Caracalla.



In the centre of the spina of a Roman circus there was sometimes one of those enormous obelisks which were brought from Egypt. The Porta Triumphalis, or gate by which the victor left the circus, was at the end opposite to the carceres. It is not improbable that the pulvinar, or emperor's seat, which, in the Circus of Caracalla, was a loggia with columns, was constructed at that part of the circus where the emperor, being near the carceres, would have the best view of the start and of the arrival at the goal. The people occupied the stone seats along the sides and at the semicircular end of the circus. The Eurípus, a canal ten feet wide and ten deep, was formed as a protection to the spectators, when they were not separated from the open space by a high podium or basement. The Circus of Caracalla has the podium, and no Euripus. Bianconi makes the Circus of Caracalla 255 French toises long, and 50 toises wide; the spina 142 toises long, and the start from the carceres to the spina 79 toises. The widths of the openings between the spina and the walls of the circus are 21.3 toises at the first goal, 19.3 at the second goal, 17 toises at the turn on the other side of the second goal, and 15.4 toises at the final goal. The width of the vaulting is 4 toises. (A toise is about 6.396 English feet.) Some notion of the appearance of the circi may be collected from the medals of Trajan and Caracalla. In these medals the metæ and the quadrigæ are discernible, and the obelisk in the centre of the spina.

In order to lighten the weight of the materials

used in the construction of the arch which supports the seats of the Circus of Caracalla, large

Reverse of Coin of Trajan. British Museum.

Reverse of Coin of Caracalla. British Museum.

amphoræ have been employed in the crown of the arch. Under this archway the people passed to the various openings with steps which led to the seats. The archway formed one great vomitórium or passage.

The Circus Maximus, which was situated in a valley between the Palatine and Aventine Hills, was very similar in form to that of Caracalla. According to Venuti, it is 1343.160 feet long by 543.2. This edifice, whatever may have been its origin, was enlarged by C. Julius Cæsar, and embellished by Augustus and Tiberius. In the time of Nero it was burnt down (Tacit. 'Annal.,' xv. 35); Trajan repaired it; and under Antoninus it became partially ruined, but was afterwards restored. Augustus brought an obelisk from Egypt, 126 feet high, and placed it in the circus; Constantius also erected in the circus the obelisk now called the Lateran, which is the largest of all the Roman obelisks.

For some curious information concerning the Circus of Caracalla, see the Cavaliere Bianconi's work on that building; *Plan of Rome*, published by the Society for the Diffusion of Useful Knowledge; Nardini's *Rome*; *Encyclopédie Méthodique*, 'Architecture;' *Topografia delle Antichità di Roma*, dell' Abate Ridolfino Venuti.

The games called *Ludi Circenses*, or Games of the Circus, were exhibited on various occasions. The exhibitions consisted chiefly of chariot and horse races. A sea-fight (*naumachia*) was sometimes represented: Domitian built a sea-fight theatre. (Suetonius, 'Domit.,' c. 5.)

The exhibition of the wild beasts (*venatio*) was one of the most attractive parts of their public entertainments. Wild beasts fought either with one another or with men; and the men were either forced to this combat as a punishment, or were induced to enter it by hire. Great expense was incurred to provide beasts for this exhibition, and they were collected from the most remote parts of the empire. In the days of imperial splendour and profusion, the public exhibitions of Rome contained nearly every rare wild animal that western Asia and northern Africa could produce.

CIRENCESTER. [GLOUCESTERSHIRE.]

CIRENZA. [BASILICATA.]

CIRRHIBARBA, a genus of fishes of the family *Gobioides* and section *Acanthopterygii*. Only one species of this genus has yet been discovered, and this is from India. It has a tentaculum over each eye and nostril, three large tentacula at the end of the muzzle, and eight under the point of the lower jaw. These tentacula constitute the chief distinctions between this genus and that of *Clinus*, to which it is closely allied.

CIRRHI'GRADA, an order of the class *Acalephæ*, according to Cuvier; of the class *Arachnodermata*, according to De Blainville.

In the animals of this group we find an internal, delicate, calcareous or cartilaginous support, forming a sort of skeleton or axis. The Cirrhigrada move in the water by means of cirrhi or tentaculiform appendages, numerously disposed on the under surface; and some, as the *Velella*, have an elevated membrane or sail on the upper surface. The body is oval, or circular, and gelatinous. Mouth, on the under surface, proboscidiform, and surrounded by tentacles.

The Cirrhigrade Acalephæ are widely diffused, being found in the seas of Europe, America, Asia, and Australia. They are met with far at sea, often crowded together in shoals or masses. The principal genera are *Velella*, *Rataria*, and *Porpita*. The species are very numerous; but the grounds of specific distinction are somewhat indeterminate.

CIRRHUS. [TENDRILS.]

CIRRI'PEDA, CIRRHIPEDA, CIRRIPEDIA, or CIRRHOPODA (genus *Lepas* of Linnæus; *Nematopodes*, De Blainville), a well-defined group of marine invertebrate animals, whose place in the system has occasioned much doubt and difference of opinion among zoologists. They present a strange combination of articulated limbs with many of the external characters of a mollusk, and may with almost equal propriety be placed either among the articulated or molluscous tribes of the Invertebrata. They form the 6th and last class of the *Mollusca* in Cuvier's arrangement, and according to his ideas establish a link between the Mollusca and the Articulata. In earlier times, the most absurd stories were propagated and believed relative to one of the most common species, the Bernicle or Barnacle, *Pentalasmis anatifera* (*Lepas anatifera*, Linn.), for a notice of which see BERNICLE GOOSE.

Mr. Thompson, in his 'Zoological Researches,' considers the Cirrhipeds to be true *Crustacea*, and

that in the first state of these animals they not only possess perfect freedom and power of motion, but organs of sight; that they undergo a series of metamorphoses or exuviations, become fixed, and lose the organs of sight entirely.

The Cirrhipeds are inclosed in a shell of variable form, and composed of many pieces, either soldered or not soldered together. In one case there is no true shell, but a soft envelope in lieu of it; and in some the shell is rudimentary. The shell or its representative is adherent to foreign bodies, either by the intervention of a fleshy peduncle issuing from the mantle, as in the common Barnacle, or is sessile, and destitute of a peduncle, as in the acorn-shells (*Balanus*), which are so common on mussel or oyster shells. Within the shell the body is invested with a sort of mantle, open on one side. There is no distinct head; no eyes (in the adult); no true tentacula; but from the apical portion of the body emerge a certain number of jointed and ciliated cirrhi. The mouth is placed at the lower part of the fissure through which the cirrhi are protruded, and is furnished with lateral horny toothed and articulated jaws; it leads to a short firm œsophagus, which receives a supply of saliva from two large glands, and then enters a capacious stomach, surrounded by the liver, a mass of minute sacculi. The alimentary canal incloses within itself a cæcal prolongation. From the symmetrical arrangement of the cirrhi we might expect to find a symmetrical disposition of the nervous system; and accordingly, as in the Crustacea, we find it homogangliate, that is, composed of ganglia and symmetrical nervous threads. Four œsophogal ganglia give origin to four nervous cords proceeding to the muscles and viscera. A double cord, connected by ganglia, is continued down the ventral portion of the body, supplying the cirrhi. The branchiæ are on each side of the base of the first cirrhi, which are also perhaps aerating organs.

With regard to the production of these creatures, the eggs are seen at certain times, within the hollow of the fleshy peduncle (in the pedunculated species), where they appear of a blue colour, and render the pedicle opaque; from this they pass through a minute conduit into the cavity of the mantle, where they group themselves in a rounded plateau, inclosed in a film, out of which they fall when ready to hatch. At first these eggs are blue; but as they increase they lose that tint, and assume a tinge of pink, and at last become nearly white. The fecundating organs unite in a single and very delicate canal, opening on the extremity of a proboscidiform tube, at the base of which the intestinal canal terminates. This prolongation is placed between the longest cirrhi.

The food of the Bernicles consists of small crustacea and mollusks, which are entangled by the many-jointed and plumose cirrhi; these are perpetually thrown out and folded again, so as to serve the purpose of a casting net, and drag the prey to the mouth, where it is seized and crushed.

The growth of the young Bernicles is apparently very rapid. On emerging from the egg they are quite free, and very different from their parents. They possess locomotive organs, consisting of a large anterior pair of limbs, provided with a sucker and hooks for the purpose of moving themselves to different objects; and also of six pairs of swimming legs acting in concert like oars. Besides these, they have a tail bent under the body, consisting of two joints, and terminating in four bristles; this is an additional locomotive organ. Thus endowed, they swim along in a series of bounds, the oars and tail giving in measured time a series of successive impulses. They have, moreover, large lateral eyes, set on peduncles, and the body is covered with a sort of shell as we see in certain crustacea (*Cyclops*), which they closely resemble, and for which Mr. Thompson at first mistook them. In due time a metamorphosis takes place: the shell is thrown off, the eyes disappear, the limbs become transformed to cirrhi; the regular valves develope themselves; the peduncle shoots forth; and the animal becomes permanently attached to the selected object, as a block of floating wood, the hull of a ship, a shell, or stone.

Many of the sessile Cirrhipeds imbed themselves in corals, and some in the skin and fat of whales, which latter animal is often infested with them to an enormous extent. We may mention the *Tubinicella Balænarum* and the *Coronula balænaris* as examples in point. Many species are eaten by the negroes, Chinese, and others; nor did the Romans disdain them. [BALANUS.]

The Cirrhipeda are divided into two orders:—

1. *Campylosomata* (*Pedunculated Cirrhipeds* of Lamarck). Animal oval, compressed, suspended in its shelly envelope, to which it adheres by a transverse muscle situated near the opening. Mantle open solely on one side, and inferiorly attaching itself to the edge of the shells, and prolonged on the other side into a contractile and fleshy peduncle adhering by its extremity to submarine bodies. Branchiæ pyramidal, adhering to the outside of the base of the cirrhi.

Shell almost always composed of five principal pieces or valves. Sometimes, but rarely, these testaceous portions are wanting, a cartilaginous envelope supplying their place. Principal valves triangular, delicate, touching or overlapping each other at the edges; sometimes rudimentary, and in that case very much separated. The valves are thus disposed. Two large lateral valves receive the transverse muscle; beyond these are two smaller lateral valves, and a mesial valve which serves to join all together. There are often a number of accessory pieces fixed at the base.

We may enumerate the following genera:—*Alepas*, with a cartilaginous envelope; *Gymnolepas*, with a rudimentary shell; *Pentalasmis*, *Pollicipes*, *Scalpellum*, and *Lithotrya*.

2. *Acamptosomata* (*Sessile Cirrhipeds* of Lamarck). Animal conical, sometimes very much depressed, and sometimes nearly cylindrical; no fleshy peduncle. Branchiæ in the form of two fringed wings, attached to the internal surface of the mantle.

Shell, thick, solid, variable in form, but nevertheless always conical or subcylindrical, adhering by its base to the surface of foreign bodies, or penetrating within them; composed of a cone

formed of one or more pieces united laterally, open at its base, or closed by a membranous or by a calcareous piece, serving for adhesion; always open at the summit, but furnished at this part with a pyramidal operculum, consisting of two or more valves.

Genera:—*Pyrgoma* (cone univalve), *Clytia*, *Creusia*, *Conia*, *Tubicinella*, *Coronula*, *Chthamalus*, *Balanus*, *Catophragmus*, *Octomeris*.

(See Cuvier, *Règne Animal* and *Mémoire sur les Animaux des Anatifes et des Balanes;* Burmeister, *Zur Naturgeschichte der Rankenfüsser*, Berlin, 1834; Thompson, in *Philosophical Transactions* for 1835, Part 2; and *Zoological Researches*, No. 3; Martin-St. Ange, in *Savans Etrangers*,' vol. vi.; also the works of M. Audouin and M. Milne-Edwards.)

CIS, a genus of minute beetles, of the family *Ptinidæ* (Leach), which infest the various species of Boleti.

CISNEROS*, FRANCIS XIMENEZ DE, a celebrated statesman and patron of literature, a cardinal, and primate, of Spain, was born in 1437 at Torrelaguna in New Castile. He studied at a school at Alcalà de Henares and at the university of Salamanca, and afterwards went to Rome. On his return, in consequence of a dispute with the Archbishop of Toledo as to patronage, he was imprisoned for six years. On his release Cisneros was appointed grand vicar to Cardinal Mendoza. In 1482 he embraced the Franciscan rule. In 1492 Queen Isabella took him for her confessor, and in 1495 nominated him Archbishop of Toledo. In this exalted station he retained all his monastic severity, and spent a great part of his enormous revenue in works of charity, or in the promotion of learning. In 1498 he founded the University of Alcalà de Henares, in which he provided for poor students, and instituted also a seminary for young ladies, and a nunnery. In 1502 he undertook, assisted by eminent scholars, his 'Complutensian Polyglot,' the type and the model of all subsequent ones. He sent to every quarter for MSS., and Leo X. obliged him with a communication of what he possessed. The whole charge of the undertaking, which was completed in fifteen years, amounted to the immense sum of 50,000 ducats.

On the death of Queen Isabella in 1504, all parties strove to attach Cisneros to their interest: he became the arbitrator between King Ferdinand and the Archduke Philip, the husband of Joanna, heiress of the crown. On the death of Philip, two years after, Cisneros was appointed regent, on account of the incapacity of Joanna and the absence of Ferdinand. There was some opposition by the grandees, but he subdued it by the aid of troops levied and paid by the crown, and thus, perhaps unconsciously, gave the first blow to the feudal system in Spain. In 1507 Julius II. gave him the cardinal's hat; but Cisneros never failed to uphold the independence of Spain. He opposed the introduction of the bulls of Leo X. for the sale of dispensations, and prevailed on the king to exclude all bulls but what had received the sanction of the royal council. Ever since that time this salutary advice has been acted upon in Spain.

Ferdinand, at his death, Jan. 23, 1516, left Cardinal Cisneros regent till the arrival of his grandson, Charles I. of Spain, afterwards Charles V. of Germany. His difficulties were now increased; but by the aid of his soldiery, by his talents and his firmness, he prevented insurrection in Spain, and preserved Navarre from the attempts of the dispossessed king, Jean d'Albret. He also boldly undertook the reform of many abuses, enforced the restitution of many crown demesnes, abolished unnecessary pensions, and strengthened his military power. In the meantime Charles's Flemish favourites kept him away from Spain, while they were selling to the first bidders the offices of that kingdom. They succeeded in deferring his entry into Castile till the cardinal's death, which happened on Nov. 8, 1517, but not before Charles, whose pride was worked upon by his flatterers, had written, to his eternal shame, a letter to the great Cisneros signifying to him his dismissal. The rare union of calmness, firmness, and decision in Cisneros, is well shown in Gometius (Gomez de Castro), 'De Rebus gestis à Francisco Ximenio;' in Marsollier, Flechier, Moreri, and Robertson.

CISS'AMPELOS PAREIRA, the Pareira-Brava, a native of several of the West Indian Islands, of New Spain, and of Brazil. The root of this plant arrives in Europe in pieces from two to three feet long, varying in thickness from that of a finger to an arm; curved, furrowed, and warty, with a thin closely adhering bark of a grayish brown colour. The odour is very faint, but the taste is at first sweetish or liquorice-like, afterwards nauseous and bitter. Analysed by Feneuille, it was found to consist of—soft resin, a yellow bitter principle (tonic), a brown principle, animalised matter, starch, malate of lime, nitrate of potash, and other salts.

The juice of the fresh plant in its native country is said to be a very efficacious application to the bites of serpents; but in Europe the root is employed only as a tonic diuretic. It is particularly valuable in cases where there is a copious discharge of urine with a ropy alkaline mucus. It is also serviceable in catarrhus vesicæ, and other affections of the urino-genital organs.

CISSOID (*κισσο-ειδης*, resembling ivy), a name given to a curve which rises towards an asymptote, and thence obtained its fanciful name. It was first considered by Diocles (an Alexandrian), posterior to Pappus, as is supposed from the latter not mentioning the name of Diocles among those who invented methods for inserting mean proportionals ('Math. Coll.,' book iii. prop. 5). It was one of the curves employed by the Greeks in the celebrated problem of finding two mean proportionals, and is described as follows:—Let two points (A and B) move with equal velocities round a circle, setting out from the ends of a diameter in opposite directions of rotation. Let a straight line (P) always pass through the starting

* He derived this surname from his family having been long established at Cisneros, in the province of Leon. The Spaniards generally call him Cardinal Cisneros; but in biographical and other works he goes under the name of Ximenes.

point of A, and through B as it moves; and let an ordinate (Q), perpendicular to the line joining the two starting points, always pass through A as it moves. Then the intersection of P and Q traces out the cissoid, which has the line joining the starting points for its tangent at the commencement, and the tangent to the circle passing through the starting point of B for its asymptote.

CISSUS. [VITACEÆ.]

CISTA'CEÆ, a natural order of polypetalous exogens, belonging to the calycose group. They are remarkable for the beauty of their fugitive flowers in the genera *Cistus* and *Helianthemum*. The species of the genus Cistus are all natives of the southern countries of Europe, where the summers are hot and dry, however severe the winters may be. They flourish upon rocky places, which they perfume with their fragrant leaves. *Cistus Creticus* and some other purple-flowered species produce the substance called Gum Ladanum.

CISTE'LIDES, a family of coleopterous insects of the section *Heteromera* and the subsection *Stenelytra*. Claws of the tarsi pectinated beneath; antennæ with the basal joint free, *i.e.* not covered by a projecting portion of the head. This family includes the genera *Lystronichus Cistela, Mycetocharus, Allecula*, and some others.

CISTERCIANS. [BERNARDINES.]

CISTUS, a genus of plants belonging to the natural order *Cistaceæ*. The flowers are either red or white, large, and resembling a rose.

C. Creticus, Cretan Rock-Rose, is a native of dry hills in the most southern parts of Europe. It has evergreen leaves which emit a balsamic odour when rubbed, or after damp warm weather in the summer. It yields, with many other species of Cistus, a gum-resin called Ladanum, formerly in great repute as a stimulant in medicine, and still used by the Turks as a perfume. *C. laurifolius*, the Laurel-leaved Gum Cistus, or Rock-Rose, has white flowers with a yellow mark at the base of each petal. It is a native of France and Spain. *C. ladaniferus*, Gum Cistus, is a native of the hills of Spain and Portugal. Two varieties are described, one with white petals having a yellow spot at the base, the other with white petals and a blood-coloured spot at the base. *C. Ledon* is a native of the south of France.

All the species of Cistus here enumerated are said to yield the Gum Ladanum. Many species which were formerly described under Cistus are now referred to Helianthemum. This is the case with the whole of the old British species of Cistus. The flowers of both these genera are very beautiful, and are remarkable for lasting only one day, opening with the rising of the sun in the morning and perishing with the setting sun of the evening. All the species of Cistus are worthy of cultivation in gardens. They should be kept in the greenhouse in the winter, although during mild seasons and against a south wall they will survive in the open air. They may be propagated by seeds or layers or by ripened cuttings procured in July or August, which, if planted under a hand-glass, will root readily.

CITADEL (remotely from the Latin *civitas*, and immediately from the Italian *cittadillo*), a fortified post within or adjoining a town. It serves either to keep the inhabitants in subjection, or as a place of retreat for the garrison when compelled to abandon the town to an enemy.

CITATION, a process in the commencement of a suit by which the parties are commanded to appear before the Consistorial Courts. In the Prerogative Court it is called a Decree.

CI'THARA, an ancient stringed instrument, supposed to have been somewhat like the modern guitar.

CITHA'RINUS, a genus of fishes of the salmon tribe (*Salmonidæ*), which inhabit the Nile. These fishes are chiefly distinguished from their allies by the depressed muzzle, the upper margin of the mouth being formed of the intermaxillary bones, the maxillaries being very small. The tongue and palate are smooth. The adipose fin is covered with small scales as well as the greater portion of the caudal fin.

CITIZEN, from the French word *citoyen*, which remotely comes from the Latin *civis*. Aristotle defines a citizen to be one who participates in the judicial and legislative power in a state; but he observes that his definition strictly applies only to a democratical form of government. The Roman word Civis, in its original and proper sense, also meant one who had some share in the sovereign power in the state; though it was also occasionally applied in a wider sense to subjects of the Roman state. The word citizen then, in its historical sense, cannot apply to those who are the subjects of a monarch, or, in other words, of one who has the complete sovereign power; nor is it a name that can be properly given to those persons under any form of government who have no share of political power.

The usual form in which citizenship is acquired is by birth; by being born of citizens. In the old Greek states, and generally in those states of antiquity where citizenship existed, this was the only mode in which as a general rule it could be acquired. In the Roman political system, a man could not claim citizenship by birth, unless he was born of such a marriage as the state recognised to be a Roman marriage; and it was essential to a Roman marriage that both parties should be Roman citizens, or that, if one of them was not a Roman citizen, such person should belong to a state with which the Romans allowed intermarriage.

The English law gives the citizenship or equal rights, so far as they depend on birth only, to all persons who are born any where of a British citizen, or of one whose father or father's father was a citizen of Great Britain. The English law also gives the citizenship to every person born in the British dominions and within the king's allegiance; which rule originated in the king claiming such persons as his subjects who were born within his dominions. In the earliest periods of English history, those were properly called subjects who may now properly be designated citizens, though citizenship in England must be divided into two kinds, as it was in Rome. Some native citizens do not enjoy the suffrage, nor are they eligible to certain offices, such, for instance, as a member

ship of the House of Commons. But these are not permanent disabilities: they are temporary incapacities arising from not having a certain amount of property, and the complete citizenship may be acquired by every citizen who can acquire the requisite property qualification, with certain restrictions as to religion, which apply to Jews, Roman Catholics, and all persons who do not profess Christianity. Those who have not the suffrage are in the situation of subjects to that sovereign body, of which those who possess the suffrage form a part. Thus the word subject may apply to some persons who live in a republic, as it does apply to all who live under a monarchy. The terms on which foreigners are admitted to the citizenship are different in different countries.

The United States of North America have had various rules as to the admission of aliens to citizenship; but at present they require a period of five years' residence as a preliminary to obtaining the citizenship.

In ancient Rome, aliens, when made Roman citizens, were not always admitted to the full rights of Roman citizens; and indeed, in the early history of the state, even the plebeians formed a body who were without many of the privileges which the patricians enjoyed. A person might receive the Roman citizenship so far as to enjoy every advantage except a vote at the public elections and access to the honours of the state. This however was not citizenship as understood by Aristotle, nor is it citizenship as understood by the free states of modern times. The acquisition of complete citizenship implies the acquisition of a share of the sovereign power: the acquisition of all the rights of a citizen, except the suffrage and access to the honours of the state, is a limited citizenship; and it is no more than may be acquired in those states where there is no representative body, and in which a man by such acquisition gets not citizenship, but the state gets a subject.

CITRIC ACID. [CITRUS AURANTIUM.]

CITRON. [CITRUS.]

CITRUS, a genus of aurantiaceous plants, one of whose species yields the orange, another the lemon, and others the citron, shaddock, lime, and similar fruits.

Eight species are enumerated by Risso, but it is a matter of great doubt how far they are really distinct. The orange, the lemon, the lime, and the citron were all that could be distinguished amongst the mass of specimens collected for the East India Company in Nepaul; and there is no great difficulty in believing that all the numerous varieties now cultivated in every part of the temperate and tropical zones, both of the old and new world, have in reality sprung from those four original sources; part of them being natural varieties obtained by long cultivation, and part being hybrids created by accidental circumstances or artificial means.

1. *Citrus aurantium*, the Sweet Orange, the principal varieties of which are:—

a. The China Orange, with round, smooth, rather flattened fruit, and a thin golden yellow rind. This is the common orange of the markets, and of the Portuguese.

b. The Pear-shaped Orange, with great top-shaped fruit, with a deep yellow, smooth rind; a rare and curious sort not known in the market; it is one of the most capable of resisting cold.

c. The Orange of Nice, with thick-skinned, rough, dark yellow, round fruit. This is considered one of the finest of the whole genus, both in regard to beauty, size, productiveness, and quality. It is a good deal cultivated about Nice.

d. The Tiny-Fruited Orange, with tiny globose fruit, and a thin, smooth, golden yellow rind. Supposed to have been brought from the Philippines. The fruit is more curious than beautiful or good.

e. The Fingered Orange, with ovate fruit, some one at least of whose lobes is separate from the remainder, and horned; rind pretty thick. This must not be confounded with the Fingered Citron.

f. The Blood-Red Orange, with middle-sized round, rough, reddish-yellow fruit, with a pulp irregularly mottled with crimson. This, which is said to have come from the Philippines, was once looked upon as a great curiosity, and plants were purchased at a considerable price. It was thought to be produced by grafting an orange upon a pomegranate. Now that it is known to be a variety, of indifferent quality, and that its fabulous history is forgotten, it has ceased to attract much notice.

g. The Ribbed Orange, with a flattened, ribbed, deep orange fruit. This is one of the most tender of the varieties. Its fruit is spongy, and of no value.

h. The Sweet-Skinned Orange, with roundish, rather ovate heavy fruit, and a deep, yellow, smooth, thick, sweet, soft rind. This is the Pomme d'Adam, or Forbidden Fruit, of the shops of Paris. Its pulp is subacid and pleasant, and as deep a yellow as the rind, which is soft and melting like the flesh of a cling-stone peach; the acidity of the pulp is agreeably mixed with sweetness, and renders the fruit extremely pleasant. This is very different from the Forbidden Fruit of the London shops.

i. The Mandarin Orange, with flattened, rough, deep orange fruit, and a thin rind, which separates spontaneously from the pulp. This sort has been raised in China, where its fruit is chiefly consumed in presents to the great officers of state, whence its name. It is now cultivated in Malta, where it arrives at perfection. Its singularity consists in the rind so completely separating from the pulp when quite ripe that the latter may be shaken about in the inside. In quality this yields to no known kind. There are two sub-varieties.

k. The Saint Michael's Orange, with small, round, pale yellow, seedless fruit, having a thin rind and an extremely sweet pulp. This, when in a state of perfection, is perhaps the most delicious of all the oranges, and it is by far the most productive. Great quantities are imported from the Azores, where it appears to be exclusively cultivated as an object of trade. It is said that 20,000 of these oranges have been packed from a single tree, exclusively of the large quantity which were blown down or rejected as unfit for sale.

Besides these, there are numerous other sorts

to be found in the gardens of the curious, and in commerce are many kinds about which little is known. Among these may be mentioned the Egg-Oranges of Malta, which are sometimes sent to England as presents; they are not, however, equal in quality to the China or the St. Michael's varieties.

2. *Citrus Bigaradia;* the Bigarade, or Bitter Orange. Fruit middle-sized, uneven, more or less globose, deep yellow, with an acid and bitter pulp. Numerous varieties of it are known, among which are all those cultivated for the sake of their flowers; especially the horned Bigarade, a variegated variety of it, and the Curled-Leaved Bigarade. The following are a few of the most striking forms of this species:—

a. The Horned Bigarade is much esteemed on account of the strong and delicious perfume of its flowers.

b. The Female Bigarade, with a deep yellow large coarse fruit, containing orange within orange. Until the discovery made by Göthe of the real nature of compound fruit, oranges of this kind were looked upon as something wondrous, and many idle speculations existed as to their cause.

c. The Curled-Leaved Bigarade. No variety is more generally cultivated than this for the sake of its flowers, which are large, sweet, and produced in extraordinary profusion.

d. The Purple Bigarade.

e. The Double-Flowered Bigarade, the common Double Orange of the nurseries. It is a great favourite in gardens, because of its multitudes of fragrant double flowers, which do not fall in pieces so quickly as those which are single. It loses its quality of producing double flowers if the soil in which it grows is not kept in a very rich state.

f. The Seville Bigarade, or Seville Orange, with round dark fruit, having an uneven, rugged, extremely bitter rind. Commonly brought to the English market, where it is consumed in the manufacture of bitter tinctures and in the preparation of candied orange-peel. The bitter aromatic principle is a powerful tonic; it gives its flavour to the liqueur called Curaçoa.

g. The Bizarre Bigarade, with fruit of different sorts, some being round and of the common appearance, others half bigarades and half lemons or citrons, the pulp of some being sweet, that of others acid and bitter. This was once thought to be the greatest prodigy in all the vegetable kingdom. It is however merely one of those sports, as they are technically called by gardeners, in which, owing to some unknown cause, some one individual assumes the appearance of two or more others in particular parts. It may be procured from the nurserymen of France and Italy, and it fruits annually in the orangery at Versailles.

3. *Citrus Bergamia,* the Bergamot Orange. The trees of this species are rather variable in appearance. The fragrance of both flowers and fruit is peculiar. From each of them the perfumer procures an essence of a delicious quality. The rind, deprived of the pulp, first dried, and then moistened with water, is pressed in moulds into fancy boxes for holding lozenges and other sweetmeats, and these boxes retain much of their recent odour. The *Mellarosa* of the Italians is a variety with ribbed fruit, having a broad scar at the summit; it is much esteemed on account of the abundance of its flowers.

4. *Citrus Limetta,* the Lime, is principally employed for flavouring punch, sherbet, and similar drinks. The varieties are of no importance. They principally differ in the thickness of their rind and in form.

5. *Citrus decumana,* the Shaddock, is among the largest fruits which are known, and is commonly cultivated in both the East and West Indies for the sake of the delicate subacid juicy pulp in which it abounds. When shaddocks arrive at their greatest size they are called Pompoleons, or Pompelmousses. When at the smallest, they form the Forbidden Fruit of the English markets. Another small variety, with the shaddocks growing in clusters, forms a larger tree than any other citrus; the fruit is about as large as the fist; it is what the West Indians call the Grape-Fruit.

6. *Citrus Lumia,* the Sweet Lemon.

7. *Citrus Limonum,* the True Lemon. Of this species the cultivators take little pains to distinguish the varieties. When young plants are wanted, they are generally raised from seeds in the orange countries, and hence the samples of fruit sent to market consist at all times of numerous sorts, differing very much in quality.

8. *Citrus medica,* the Citron. This is an exceedingly variable species, chiefly valued for the fragrance of the rind of the fruit, from which a delicate sweetmeat is prepared. The Citron, supposed to be the Median, Assyrian, or Persian Apple of the Greeks, is probably the most beautiful species of the genus. It is described by Risso as having a majestic port, shining leaves, and rosy flowers, which are succeeded by fruit whose beauty and size astonish the observer at the same time that their sweet odour gratifies his senses. The trees are constantly in vegetation, the flowers appear even in mid-winter, and there is so continual a succession of them, that flowers, young fruit, and ripe fruit may always be seen together at the same moment. The Poncire Citrons are eight or nine inches long, and are the largest of the race known in Europe.

In China there is an enormous variety, with its lobes all separating into fingers of different shapes and sizes, whence its name of Fingered Citron. The Chinese esteem it very much, both for its rarity and for the grateful odour of its rind. They place the monstrous fruits upon porcelain dishes, and have them in their apartments to fill the air with fragrance.

CITRUS AURANTIUM, *the Orange,* of which there are two varieties, the Sweet, or China Orange, and the Bitter, or Seville Orange. The fruit of the latter, while small and unripe, is collected and dried; the smallest, which are of the size of a pea, are used for keeping issues open, and the larger for the preparation of the liqueur called Curaçoa. Of the ripe fruit every part is used either medicinally or dietetically. The rind, called Flavedo, contains a bitter principle and much

volatile oil; and either used as a dessert, or reduced to powder and added to magnesia and rhubarb, furnishes a grateful tonic to the stomach in some forms of dyspepsia and gout. The pulp and juice are exceedingly agreeable to persons affected with inflammatory complaints, or a drink prepared from it (orangeade) is of great utility in bilious and gastric fevers, dysentery, &c. The roasted pulp forms an excellent application to fetid ulcers.

The powers of lemon juice are much increased by saturating it with chloride of sodium (common table salt). It is then of great efficacy in the treatment of dysentery, remittent fever, the dry belly-ach, putrid sore throat, and other diseases occurring in the West Indies.

Citric Acid exists in numerous fruits, particularly those of the orange tribe, such as the lemon and lime, either alone, or with malic and other acids; sugar, mucilage, and extractive are also present. It is colourless, inodorous, and extremely sour. The primary form of the crystal is a right rhombic prism, subject to numerous variations. These crystals melt at about 212°, and decompose at a higher temperature. Citric acid consists of C^4, H^2, O^4. When decomposed, it yields pyrocitric acid, and several other compounds. The citric acid is separated and purified on a large scale. Citric acid, when crystallised, has scarcely any odour, but a very distinct acid taste. It is soluble in cold water, but more abundantly in warm water. It is used as a discharge in calico printing.

Citric acid combines with ammonia, potash, soda, iron, zinc, copper, silver, lead and other bases, to form salts.

Concentrated citric acid is somewhat caustic, but lemon juice is gratefully acid. To imitate the natural state, citric acid is only given largely diluted. In this state it proves a pleasant drink in fevers and diseases where the temperature of the body rises above the natural standard. According to Broussais, it agrees better than any other acid with the stomach when affected with acute inflammation. It is not so pleasant as lemonade prepared from new fresh lemons, and, according to the statement of Sir G. Blane, the solution of citric acid is not so efficacious in the prevention and cure of sea-scurvy as the recent lemon juice. This is attributable to the absence of the volatile oil and the bitter principle of the rind, which are valuable adjuncts to the citric acid in its action on the stomach. The utility of lemon juice in promoting the digestion of gelatinous meats, such as veal and turtle, is well known. Fresh lemon juice may be preserved in bottles in the same way as ripe fruits, by boiling the bottles in which it is contained for half an hour, first placing them in cold water, and gradually heating it, and, as soon as the contents of the bottles have fallen to the temperature of the air, closing them hermetically. Where lemon juice so preserved, or fresh lemons, cannot be obtained by ships on long voyages, the dissolved citric acid, to which a portion of an alcoholic extract of lemon peel may be added at the time of using, must serve as a substitute, should any apprehensions of scurvy be entertained.

Lemon-juice is often a means of correcting acidity in the stomach, since, like most vegetable acids, it elevates the vitality of that organ, and prevents the formation of an excess of acid.

Citric acid, as well as lemon juice, is much employed to decompose alkaline carbonates, forming therewith pleasant effervescing solutions. These taken in the act of effervescence are often of great utility in checking vomiting, and in reducing the temperature in inflammatory complaints; but the amount of injury done by the indiscriminate use of effervescing draughts made with a vegetable acid is incalculable. 'Were I required,' says Dr. Prout, 'to name the medicine calculated to do the most mischief, I should name the common saline draught formed of potash or soda, and some vegetable acid.' Citric acid alone is very useful in the phosphatic diathesis; it is the alkaline base in this combination which does harm.

Externally citric acid largely diluted has been beneficially employed as a refrigerating wash, in the same way as vinegar. Slices of lemon form useful applications to scorbutic and other sores, and also at the commencement of hospital gangrene.

CITTA' VECCHIA. [MALTA.]

CITTERN. [GUITAR.]

CITY (in French *Cité*, ultimately from the Latin *Civitas*). Certain large and ancient towns both in England and in other countries are called cities.

Blackstone, following Coke (1 'Inst.' 109 b), says, 'A city is a town incorporated, which is or hath been the see of a bishop.' ('Comm. Introd.', sec. iv.) But Westminster is a city, though it is not incorporated. Thetford is a town, though incorporated, and once the seat of a bishop. Whether Westminster owes its designation to the circumstance that it had a bishop for a few years of the reign of Henry VIII., and in the reign of Edward VI., may be doubted. But there are, besides Thetford, many places which were once the seats of bishops, as Sherburn, and Dorchester in Oxfordshire, which are never called cities.

In the United States of North America, the name City is usually given to large towns, as New York, Philadelphia, and others.

CIUDAD, the Spanish prefix representing the English affix *town*, as Ciudad-Rodrigo, which means Roderic's Town.

CIUDAD REAL. [CASTILLA LA NUEVA.]

CIUDAD RODRIGO. [LEON.]

CIVET. [VIVERRIDÆ.]

CIVIC CROWN. Among the Romans a civic crown was the recompense for the life of a citizen saved either in battle or assault. This crown, which was in fact a wreath, was at first of elm, afterwards beech was used, and lastly, and most generally, oak. (Rasche's *Lexicon Rei Numariæ*.)

CIVIL ARCHITECTURE. Although this term appears to imply no more than a particular branch of architecture in contradistinction to that called military, it in reality comprises the whole of architecture considered in regard to design or as a fine art. Architecture includes construction, but it aims at something more—at grandeur or beauty, at exhibiting qualities and effects to which building and construction are no more than the means.

The Grecian style of architecture is that whence-

the Roman and Italian orders are derived, and, so modified, prevails more or less throughout the whole of Europe, at the present day, except in those buildings, and they are comparatively few, where the Gothic is avowedly imitated. It is necessary to explain that what is termed an Order consists of two principal divisions, the *Column* and the *Entablature*—that is, the upright support, and the horizontal mass supported by it; the Column being again divided into *Base*, *Shaft*, and *Capital* (except in the Doric order, where the shaft rests immediately upon the flooring); the Entablature also into three parts—*Architrave*, or Epistylium, *Frieze*, and *Cornice*. These together constitute an Order; which is further distinguished as belonging either to the Doric, or Ionic, or the Corinthian style, according to certain general proportions and characteristic embellishments. The scale for the proportions—that is, not the actual but the relative dimensions of the different parts compared with each other—is taken from the lower diameter of the shaft of the column, which is divided into two modules or sixty minutes. Modern systematisers have attempted to fix certain invariable proportions for each order; and some have maintained that by them, quite as much as by peculiarities of detail and embellishment, the character of an order is determined. In regard to proportions, however, even greater discrepancy is found between different examples of the same order than between two distinct orders. We must therefore attend to certain indicial features and marks by which the particular order may be immediately recognised: thus the absence of base or mouldings at the bottom of the column, the plain capital composed of merely an echinus and abacus, and a triglyphed frieze, enable us to pronounce at once that the order is the Doric. In like manner the voluted capital, or the foliaged one, as distinctly denotes that it is either Ionic or Corinthian. In regard to the two last-mentioned, the principal distinction between them is confined to the capital; there being no other determinate difference between the columns of the one or the other, or in the entablatures, if we except the modillions peculiar to the Corinthian, as we find it in Roman examples. Were we to see only the shaft of the column, we should be able to decide from that alone whether it were Doric or not; the flutings peculiar to that order being broad and shallow, and forming sharp ridges or arrises on the circumference of the shafts; whereas in the other two they are narrower and deeper, rounded at their extremities, and divided from each other by fillets or spaces left between the channels on the surface of the shaft. In like manner were we to see the fragment of an architrave, we could pronounce with tolerable certainty whether it was Doric or not; although in the latter case not quite so clearly whether it was Ionic or Corinthian. The Doric architrave consists of a single plain face surmounted by a broad fillet, here termed the tænia, to which another fillet with small cylindrical guttæ or drops is attached beneath each triglyph; but the architraves of the other two orders are divided into (generally) three faces or faciæ, slightly projecting one above the other, and crowned by curved mouldings, sometimes plain, but more frequently enriched. By attending to these few simple and obvious distinctions, no one can feel any difficulty in ascertaining the particular order to which a building belongs.

The earliest examples of the Grecian Doric—as, for instance, that of the temple at Corinth—are marked by a massiveness of proportions approaching to heaviness, if not to rudeness; which circumstance, together with the narrowness of the intercolumns (spaces between one column and another), favours the supposition that the Greeks borrowed their first ideas of architecture from Egypt; and, if this be admitted, the hypothesis of the different parts of a Grecian structure being derived from a primitive timber hut falls at once to the ground.

In attentively examining the Grecian Doric, we can hardly fail to note what admirable taste and study of effect it exhibits throughout, and how every part is made to conduce to the character of the whole. The columns are of short proportions, the entablature deep; the columns have no bases, which, owing to the narrowness of the intercolumns, would have proved highly inconvenient. The fluting, while it diminishes the heaviness, produces great variety of light and shade in every direction; and the mode of fluting peculiar to this order is admirably in unison with the expression of all the rest, the channels being wide and shallow, and separated from each other by mere ridges on the surface; both of which circumstances contribute to that breadth and simplicity which pervade the other parts. No less appropriate and well imagined is the capital, which consists of little more than an echinus and deep square abacus above it; the former expanding itself out from the neck, or upper part of the column, until its diameter becomes equal to that of the foot of the column: in reality, it is something greater, but not more so than is requisite to counteract the apparent diminution caused by the greater distance from the eye. The architrave is plain and deep, well proportioned both as to the weight which it has to bear and to the column below, its average height being equal to the upper diameter or narrowest part of the column. The width of its *soffit*, or under side, is about a medium between the two extreme diameters, so that it overhangs the upper part of the shaft; yet it is not so broad as the abacus of the capital, which by opposing a greater surface to it appears better calculated to support its pressure. In the Grecian Doric the frieze is generally of the same dimensions as the architrave, very rarely deeper, in some examples not so deep. The *triglyphs* which decorate it, and are peculiar to the order itself, are upright slightly projecting tablets (in width rather more than half the lower diameter), channelled with two grooves or glyphs, and with a half groove chamfering off each of its outer edges. The spaces between these ornaments, which were originally intended to represent the extremities of the beams (whether stone or timber) resting upon the architrave and forming the inner roof or ceiling, are square, or nearly so, and are distinguished by the

name of *metopes*, that is, spaces or intervals. They are in fact so many small pannels, and were generally filled with sculpture in bas-relief. Beneath each triglyph is a series of small *guttæ*, or cylindrical drops, attached to a fillet, just under the moulding of the architrave, to which division of the entablature they may be said to belong: although evidently a continuation of the ornaments on the frieze, they contribute to architectonic expression and effect, inasmuch as they break the monotony of line, and, by extending some ornament to the architrave, bring it into harmony with the frieze. The space between one triglyph and another being regulated by the height of the frieze, since each metope forms a square, this circumstance also regulates the *intercolumniation*, or distances at which the columns are placed.

Like every other part of the order, the Grecian Doric cornice is composed of few and bold parts; it consists of little more than a corôna (the projecting and principal member in every cornice), finished above by one or two simple mouldings, and having attached to its soffit a series of shallow plates or tablets, studded with guttæ. These are termed *mutules*, and are the peculiar distinctive marks of the Doric cornice, in like manner as *dentils* are of the Ionic, and *modillions* of the Corinthian.

The sloping or *raking cornices* of the pediment resemble the horizontal one, except that there the mutules are omitted, although not in Roman or Italian Doric. In order however to give increased depth and importance to the pediment, as the finish of the whole structure, its cornices have an additional member, termed by some the *epitithedas*, consisting of an ovalo or convex moulding, or a cymatium; sometimes deeper, sometimes shallower. This *epitithedas* was continued a little way at the angles, where it usually terminated against a block, carved with a lion's head, or some other ornament. The face of the pediment itself, termed the *týmpanum*, was almost always filled with sculpture.

For practical examples of this order, we refer to the portico of Covent Garden Theatre and the Corn Market, Mark Lane, London, in which latter the frieze is decorated with wreaths instead of triglyphs—as in the monument of Thrasyllus at Athens—and consequently the spaces between them cannot be called metopes; and the new galleries in the west wing of the British Museum.

In the Ionic order the column differs widely from that of the Doric, not only in the form of its capital, and in having a base, but in the contour of its shaft and the mode of fluting, it being more slender and not tapering so suddenly. The base is generally that termed the Attic-base, composed of two tori, or convex rings, with a concave moulding, the *scotia*, between them; for, as the Doric character demands plane surfaces and lines, so does the Ionic require curved mouldings and contours, as harmonising with the curved forms of the volutes of the capitals. To prevent the harshness which would result if the mouldings forming the base jutted out abruptly from the lower end of the shaft, the latter is made to spread itself out immediately above the base in a sweeping curve, termed the *apóphyge*. The number of the flutings of the shaft is increased from twenty to twenty-four, besides which there are spaces left between them (fillets); for the mere arrises or sharp edges, peculiar to the Doric or earliest mode of fluting, would be utterly at variance with the rounded contours of the base and capital.

The capital may be described generally as consisting of two faces, about as wide, measured across the volutes, as the base—that is, a diameter and a half, or 90 minutes; which breadth is divided into three equal parts, 30 minutes being allowed for each volute. These volutes are composed of spiral mouldings, which make several revolutions, and gradually become narrower as they approach what is termed the eye, or *cáthetus*. Immediately beneath this part of the capital is a carved convex moulding, to which succeeds the echinus or ovolo (so called because invariably cut into the form of eggs), and lesser mouldings. The idea of an Ionic capital therefore seems to have been that of introducing an ornamental mass between the echinus and abacus of the earlier shaped capital, and rolling up its deep projecting extremities into volutes. The capitals at the angles of a portico are frequently differently arranged, since, in order to obtain a face on the return similar to that in front, the outer volute is turned diagonally, so as to serve for both faces; a mode adopted for all the capitals, without distinction, by many Italian architects. The architrave is divided into three nearly equal faciæ, projecting very slightly one over the other, and crowned by a *cyma-recta* moulding, carved or plain, as the rest happens to be more or less enriched. There being no particular members appropriated to the frieze, as in the Doric order, unless enriched with sculpture, it is a mere plain surface; but, although generally so decorated by the Greeks, there is hardly an instance of it among ourselves, except in the portico of the East-India House, London.

The cornice in Athenian examples is exceedingly simple, consisting only of two mouldings beneath the corona, the uppermost being within the hollowed soffit of that member; nor do dentils, which are generally reckoned the distinguishing marks of the Ionic cornice, appear to have been used, except by the Asiatic Greeks. Consequently, unless the frieze is enriched with sculpture, so as along with the cornice to produce a rich ornamental mass above the architrave, not only is the cornice apt to appear meagre, but the whole entablature to look cold and naked, even plainer than that of the Doric order, and to offer any thing but a pleasing contrast to the elegant richness of the capitals below it. What has already been said in regard to the pediment will suffice for this order likewise, there being no other difference than what is occasioned by the cornices themselves. In Italian architecture, pilasters are very frequently employed in lieu of columns, or are placed against a wall to correspond with a range of columns in front of it; their bases and capitals too are made to correspond with those of the columns, as far as the difference between a square and circular plan will allow. The Greeks,

on the contrary, never employed antæ, or pilasters, except at an angle or the extremity of a wall; and, instead of aiming at perfect similarity, they purposely gave to such pilasters bases and antæ-caps dissimilar from those of the columns; neither did they diminish them, but made them of the same width above and below, which width was determined by that of the soffit of the architrave, and was therefore something less than the lower diameter of the column, but greater than the upper diameter, since both in the Doric and Ionic the architrave overhangs the upper part of the column.

In regard to *intercolumniation*, or the distances at which columns are placed from each other, and upon which so much of their effect depends, it has already been mentioned that in the Doric order this is regulated by the triglyphs, and that monotriglyphic intercolumniation may be considered as the extreme of pycnostyle (thickly set), as it will sometimes occasion the columns to be less than a diameter and a half apart, the limits assigned to *pycnostyle*. The second mode is termed *systyle*, or two diameters apart; the third *eustyle*, or two and a quarter; the fourth *diastyle*, or three diameters; and, lastly, *aræostyle*, or four or more diameters. But the precise spaces thus laid down do not seem to have been adhered to; and the Greeks, who seem never to have worked according to fixed rules, although precise rules have been since laid down from their works, seem to have allowed themselves any intermediate interval from a diameter and a quarter to two diameters, which they rarely exceeded, except when particular circumstances required it.

Simple as are the plans of Grecian temples, there are many terms required to express their varieties in regard to the application of columns, besides those denoting the number of columns in front, that is, beneath the pediment. Thus, if there were columns only in front, the building was termed *prostyle;* if at each end, *amphiprostyle;* if there were also *colonnades* along the sides, it was said to be *peripteral*, that is, with wings (aisles) or colonnades quite round it. When there were two rows of columns, one behind the other, it was termed *dipteral*. Again, where a range of columns was placed between antæ, forming the extremities of walls at right angles with such colonnade, it was said to be *in antis*. This was generally the case with the pronáos, the vestibule or inner portico behind the columns in front. According to the number of columns in front, porticoes are said to be *tetrastyle*, that is, with four columns; *hexastyle*, with six; *octastyle*, with eight; *decastyle*, with ten; and *dodecastyle*, with twelve, the greatest number that can very well be brought beneath a pediment; and even of these two last the examples are exceedingly rare. If instead of columns at the angles there were antæ, then the number of columns alone was reckoned as before, and would denominate what would be equivalent to a portico containing two or more: thus a *distyle in antis*, that is, two columns between two antæ, would be equal to a tetrastyle, as in both there would be three intercolumns; a *tetrastyle in antis* would be equal to a hexastyle, and so on.

Although the name itself would seem to show the contrary, Grecian architecture affords no precedent for what is termed an Attic order, that is, a series of dwarf pilasters crowned by a cornice; and balustrades also are of modern invention. The only thing of the kind in ancient examples, and that of exceedingly rare occurrence, is a low and plain unbroken podium, or parapet, that is, without pilasters or other projections, above the cornice of a building. Far from attempting to conceal the roofs of their temples, the Greeks not only made them very conspicuous in the outline of the pediments, but bestowed much decoration on them, ornamenting the ridges and tiles, and placing a series of *antefixæ*, or enriched front tiles, above the cornice along the sides of the building. This species of embellishment has been adopted in the church of St. Pancras, London, which also affords beautiful and correct specimens of Grecian doors and windows. The latter, which are copied from those of the Temple of Minerva Polias, forming the western portion of the Erechtheion, are almost the sole extant type in Grecian architecture for such apertures. They are surrounded by a moulded architrave, and the jambs incline towards each other, so that the aperture of the window is somewhat narrower at the top than at bottom.

The doorways of Grecian temples were made lofty and spacious, not only for the sake of rendering them important architectural features, but also because the light was admitted into the cella, or interior fane, usually of small dimensions compared with the general structure, through the entrance. Almost the only instance of windows in such structures is that above mentioned; and consequently the interior was imperfectly lighted, unless the temple itself was of the kind denominated hypæthral, that is, exposed to the sky (as was the Parthenon), the centre portion being left unroofed, with merely a covered colonnade or portico around it, above whose columns were others forming a smaller order; for, as such inner peristyle consisted of columns less in diameter and height than those of the exterior one, the additional tier was necessary to fill up the greater altitude occasioned by the slope of the external roof above them. Like the windows, Grecian doorways were sometimes narrower at top than at bottom, and were embellished conformably to the character of the building.

Though the small structure at Athens, called the Choragic Monument of Lysicrates (copied in the belfry of St. Philip's Chapel, Regent Street, London), furnishes one of the most exquisitely designed examples of the Corinthian or foliaged-capital order that have been preserved to us, it is almost a solitary extant instance of the application of it by the Greeks; unless we choose to reckon as such the capitals of the small columns supposed to be those of the porch of the Tower of the Winds, and which have merely a single row of leaves at bottom. It is true that some magnificent edifices belonging to this order, such as the Temple of Jupiter Olympius at Athens, were erected in Greece; but they belong to a later period, after the order had been extensively employed by the

Romans, who, whether its originators or not, brought it to perfection as a distinct style; for, although various single capitals ornamented with foliage have been discovered among Grecian remains, they are as dissimilar from the Corinthian style as are the degenerate imitations of such capitals which occur in Lombardic and Norman architecture. That the Romans, with whose taste for magnificence this florid species of capital well accorded, succeeded in establishing a style comprehending many varieties of it, expressive of different degrees of character up to the most luxuriant richness, is evident from the examples they have left, almost every one of which is distinguished by some peculiarity, although they all agree in certain leading points. The average height of the column is ten diameters; yet the capitals and bases being proportionably deeper, the shaft itself is not much more than eight diameters. The capital is composed of two rows of leaves (generally those termed acanthus), those of the upper rows springing up from between the lower ones. There are eight leaves in each row, so arranged that one of the upper ones accords with the centre of each side of the abacus; and from the sides of the centre leaf spring out other leaves, whence emerge the *hélices*, or spirals, placed diagonally to support the extremities of the abacus, besides lesser spirals which meet, and sometimes intertwine each other above each middle leaf. The abacus itself, which is peculiar to this order, may be described as square in its general plan, but having its sides made somewhat concave, so as to curve out towards the angles, yet not overhang the body of the capital. Thus not only is extent given without heaviness, but a most pleasing contrast is produced between the convex surface of the column and the concave sides of the abacus. The angular helices were sometimes so enlarged as to assume the form of Ionic volutes placed diagonally. This kind of capital is termed Composite, and has been reckoned to constitute a distinct order, yet very improperly, since it does not affect the general character and proportions of the whole ordinance; and if a specific name is to be assigned to each variety, which is to entitle it to be considered a class by itself, we shall have almost as many orders as there are ancient examples. Even the circumstance of the shaft being fluted or plain, which occasions a more obvious dissimilarity than that observable between the Corinthian and Composite capitals, ought to constitute a distinction of orders.

The Corinthian entablature differs little from that of the Ionic, except in the cornice being made richer and deeper, and the number of its members increased, in order to harmonise with the deeper capital of the columns. One of the features peculiar to it is the series of modillions or small brackets supporting the corona, besides which there are frequently dentils also; sometimes again both are omitted, although there is much ornament in other respects. Indeed, the examples of this order vary so much, not in their cornices alone, but numerous other particulars, that we cannot refer to them here, and shall therefore mention only the three principal ones, namely, the Corinthian of the Pantheon at Rome, of Jupiter Stator and the Temple at Tivoli.

The Roman Doric and Ionic, of which there are but few examples extant, are both so decidedly inferior to their Grecian originals, that they may well be termed depravations of them. They have, however, been adopted by the Italians.

Of what is called the Tuscan order, there are no authentic examples to enable us to decide what it really was; but, as laid down by writers of the Italian architectural schools, it is no more than a simple variety of the Doric, with unfluted columns, and without triglyphs.

If the Romans deteriorated the two Greek orders, and brought to perfection a third, of which we meet with little more than the rudiments (as contained in foliaged capitals) among Grecian remains, they likewise, by their extensive application of the arch, materially altered the system of building, and obtained greater variety, though generally at the expense of consistency. Columns frequently became no more than ornaments attached to the face of piers which support arches; while the introduction of successive tiers of arches led to the practice of *supercolumniation* (or placing order over order). The arch, again, was employed, not merely to cover apertures in walls, but was used continuously between two walls, so as to form a vaulted ceiling, whether groined or semicircular. If the area to be so covered was large and of square proportions, the walls and vault were then made circular in plan, whereby the latter became a dome. The use of the arch enabled the Romans to erect works on a larger scale, and that too chiefly with brick; and it likewise led to the adoption of circular forms in plans, combined with square ones, thereby giving rise to a variety and complexity in which Greek structures are utterly deficient.

Roman domes were generally hemispherical, and made to appear much less than that externally; whereas the Italians and other moderns have not only affected greater loftiness of contour, but have usually elevated the whole dome upon a circular basis termed its tambour, sometimes of greater altitude than the dome itself.

In themselves both the dome and arch are beautiful features, and, if discreetly and tastefully applied, do not at all contravene with the character of Greek architecture, unless that style is to be confined to the mere temple form, instead of being extended by what the Greeks themselves would probably have availed themselves of had they been acquainted with the dome and arch.

In adopting the Roman orders, the Italians reduced them to strict mechanical rules, making a merit of adhering to one invariable set of proportions for each; yet this has not prevented them from innovating without scruple. The Italian style has much to recommend it, if, while we reject its solecisms and vices, we not merely adopt what is good in it, but improve its detail from the best Greek and Roman sources.

We have not here attempted to give any sketch of the history of the art, and for that reason we have not even mentioned Gothic architecture. [GOTHIC ARCHITECTURE.]

CIVIL LAW. [ROMAN LAW.]

CIVIL LIST. The expenses of the English government, including military expenses, were formerly comprehended in one general list, and defrayed out of what was called the royal revenue. For a considerable period after the Conquest this revenue, derived from the rents of the crown lands and from other sources, was under the sole management of the crown. Even when the greater portion of the expenses of the government came to be granted by parliament in the form of supplies, the entire expenditure was still left with the crown, and the supplies were either voted for no specific purpose, or, when they were voted for a special purpose, parliament had no control over their application.

This continued to the Restoration in 1660. A distinction was then made between the military expenses of the government, and those incurred in the maintenance of the ordinary establishments of the country. The revenues appropriated to the latter were called the hereditary or civil-list revenues, and were provided for partly from the crown lands that remained unalienated, and partly from certain taxes imposed by parliament expressly for that purpose during the life of the reigning king. In the reign of William III. the sum applicable to the civil list, on an average of years, amounted annually to about 680,000*l.* This sum was applied in defraying the expenses of the royal household and of the privy purse, the maintenance and repairs of the royal palaces, the salaries of the lord chancellor, the judges, the great officers of state, and the ambassadors at foreign courts; and out of it were also paid the incomes of the members of the royal family, the secret service money, pensions, and a long list of other claims.

In the reign of Anne the civil list remained of nearly the same amount as in the reign of William. At the commencement of the reign of George I., 700,000*l.* a year was voted by parliament for the civil list, and certain taxes, as usual, were appropriated to it.

At the accession of George III. he surrendered the larger branches of the hereditary revenue of England, and the sum of 800,000*l.* was voted by parliament for the civil list, but no particular taxes were set apart to provide that revenue. In the course of a few years a large amount of debt had accumulated in this department, and, to pay it off, two sums amounting together to considerably above 1,000,000*l.* were voted by parliament in 1769 and 1777. In the year 1777, also, the civil-list revenue was permanently raised to 900,000*l.* This however did not prevent further deficiencies, which were again made good by parliament in 1784 and 1786, to the extent of about 270,000*l.*

In 1780 Mr. Burke brought in his bill for the better regulation of the civil list, which, although it was greatly mutilated before it passed into a law (in 1782), abolished several useless offices, and effected some reduction of expenditure.

According to the report of a committee of the House of Commons upon the civil list in 1802, the total average annual expenditure in that branch since 1786 had been 1,000,167*l.*, under the following heads:—royal family in all its branches, 209,938*l.*; great officers of state, 33,279*l.*; foreign ministers, 80,526*l.*; tradesmen's bills, 174,697*l.*; menial servants of the household, 92,424*l.*; pensions, 114,817*l.*; salaries to various officers, 76,013*l.*; commissioners of the treasury, 14,455*l.*; occasional payments, 203,964*l.* At this time another sum of above 990,000*l.* was voted by parliament to pay the debts on the civil list; and in 1804 the civil list revenue was raised to 960,000*l.* In 1812 it was further augmented to 1,080,000*l.*; besides which, annuities to the amount of 260,000*l.* were then paid to the different branches of the royal family out of the consolidated fund.

Another committee inquired into the subject of the civil list in 1815, and it was upon the report made by this committee that the amount of the civil list was settled, on the accession of George IV., at 850,000*l.* per annum, 255,000*l.* of annual charge being at the same time transferred from this branch to other funds. It was calculated that the distribution of this sum would be under the following heads:—1. His Majesty's privy purse, 60,000*l.* 2. Allowances to the lord chancellor, judges, and speaker of the House of Commons, 32,956*l.* 3. Salaries, &c. of his Majesty's ambassadors and other ministers, salaries to consuls, and pensions to retired ambassadors and ministers, 226,950*l.* 4. Expenses, except salaries, of his Majesty's household in the departments of the lord steward, lord chamberlain, master of the horse, master of the robes, and surveyor-general of works, 209,000*l.* 5. Salaries in the last-mentioned departments, 140,700*l.* 6. Pensions limited by Act 22 Geo. III. c. 82, 95,000*l.* 7. Salaries to certain officers of state, and various other allowances, 41,306*l.* 8. Salaries to the commissioners of the treasury and chancellor of the exchequer, 13,822*l.* 9. Occasional payments not comprised in any of the aforesaid classes, 26,000*l.* The crown was left besides in the enjoyment of the hereditary revenues in Scotland, amounting to about 110,000*l.* per annum; and also of a civil list for Ireland, of 207,000*l.*

On the 15th of November, 1830, immediately after the accession of William IV., the late Lord Congleton, then Sir Henry Parnell, carried in the House of Commons a motion for appointing a select committee to inquire into the civil list. The chief object proposed was the separation of the proper expenses of the crown from all those other charges which still continued to be mixed up with them under that title. The consequence of the success of this motion (besides the overthrow of the Wellington administration and the introduction of the Reform Bill) was another report, upon which was founded the Act 1 Will. IV. c. 25, for the regulation of the civil list. The committee recommended that the civil list charges should be confined to expenses proper for the maintenance of their Majesties' household, and the sum of 510,000*l.* was granted to his Majesty by the above act under the following classes:—1. For their Majesties' privy purse, 110,000*l.* 2. Salaries of his Majesty's household, 130,300*l.* 3. Expenses of his Majesty's household, 171,500*l.*

4. Special and secret service, 23,200*l.* 5. Pensions, 75,000*l.* A separate civil list for Ireland was discontinued; and the Scotch hereditary revenues, as well as the droits of admiralty and the 4½ per cent duties, were to be paid into the exchequer for the use of the public.

Speaking of the civil list as settled by 1 Will. IV. c. 25, and comparing it with the civil list of Geo. IV., Lord Congleton remarked ('Financial Reform,' p. 205), 'that there was no real reduction in that arrangement, for whatever appears to be a reduction has been produced by a transfer of charge from one head to another of the old civil list. The chief difference in this arrangement from the former consists in the transfer of about 460,000*l.* a year from the civil list to the consolidated fund, and in providing for the gradual reductions of the pensions to 75,000*l.* a year.'

William IV. retained the revenues of the duchies of Lancaster and Cornwall, which are considered to be the hereditary revenues, not of the crown, but of the duchies of Lancaster and Cornwall. The duchy of Lancaster is permanently annexed to the crown, and the duchy of Cornwall belongs to the crown when there is no Prince of Wales. No account of the amount of these revenues had ever been laid before parliament until very recently.

The civil list of Queen Victoria was settled by 1 Vict. c. 2, which enacts that the hereditary revenue shall be carried to the consolidated fund during the life of her Majesty, but that after her demise it shall be payable to her successors. The latter part of the enactment is a mere form. By s. 3, the clear yearly sum of 385,000*l.* is to be paid out of the consolidated fund for the support of her Majesty's household and of the honour and dignity of the crown, to be applied according to a schedule as under:—

1. For her Majesty's privy purse . .	£60,000
2. Salaries of her Majesty's household and retired allowances	131,260
3. Expenses of her Majesty's household	172,500
4. Royal bounty, alms, and special services	13,200
5. Pensions to the extent of 1200*l.* per annum.	
6. Unappropriated moneys	8,040
	£385,000

The amount which can now be granted in pensions by the crown in any one year is not to exceed 1200*l.*; and the Civil List Act restricts, though in a comprehensive spirit, the persons to whom they are to be granted, who must be such persons only as have just claims on the royal benevolence, or who by their personal services to the crown, by the performance of duties to the public, or by their useful discoveries in science and attainments in literature and the arts, have merited the consideration of the crown and the gratitude of their country. A list of all such pensions must be laid before parliament yearly. [Pensions; Woods and Forests.]

CIVITA', an Italian word which means 'town,' and forms part of the name of several Italian towns.

CIVITA', VE'CCHIA, a fortified town and free port in the province of Viterbo, 36 miles N.W. from Rome, has about 8000 inhabitants. Its harbour is formed by two piers of marble blocks, first raised by Trajan, who had a country residence here called Centum Cellæ. There is a depth of water from 14 to 18 feet in the harbour, which is the only safe one on the west coast of the Papal State; it is frequented by about 1000 vessels, of various sizes, in the course of the year. There is a lazaretto for ships coming from infected countries, also docks, an arsenal, and a prison for galley-slaves. The lighthouse and the citadel were built by Michel Angelo. The present town was built by Pope Leo IV. The streets are regular and the houses well built. The town has a cleanly and bustling appearance. The air, although not very good in summer, is not altogether unwholesome, but the country around is subject to the malaria. Steamboats ply regularly between this port and Naples, Leghorn, and Genoa. (Calindri, *Saggio Statistico.*)

CIVRAY. [Vienne.]

CLACKMANNAN, a very small county in the eastern part of Scotland, bounded S. by the Forth, N. and W. by Perthshire, and E. by Perthshire and Fifeshire. Its greatest length from N.W. to S.E. is about 9 miles, and its width from N.E. to S.W. about 8 miles. The area is 43 square miles, or 30,720 acres. The population, in 1841, was 19,155. The county of Clackmannan, in conjunction with the county of Kinross, returns one member to the House of Commons. The surface in the southern part, adjacent to the Forth, consists of level alluvial tracts, which are very productive in corn, and contain good pastures. Towards the northern extremity the land rises gradually into the Ochill Hills, which traverse the county from S.W. to N.E., and furnish some pasturage for sheep. The woodlands cover about 500 acres, and at least 2000 acres are laid out in plantations. The annual produce of coal is about 150,000 tons. There are also quarries of freestone, granite, and iron-stone which contains from 20 to 30 per cent. of iron. Silver, lead, copper, cobalt, antimony, arsenic, agates, pebbles, and topazes have been found, but not in sufficient quantities to defray the expense of working. There are numerous creeks along the Forth which are used by the fishermen. The largest town in the county is Alloa. The town of Clackmannan is situated on a hill on the north-eastern bank of the Black Devon, about two miles above the entrance of that river into the Forth, where there are piers. Clackmannan is the county town, though the county courts are held at Alloa. The population in 1841 was 1,077.

CLA'DIUM (from κλάδος, a branch or twig), a genus of plants belonging to the natural order *Cyperaceæ*. There is only one European species of this genus, the *C. mariscus*, Common Sedge. It is not a common plant in Great Britain, except in Cambridgeshire, where in the bogs and fens of that county hundreds of acres are covered entirely with it. This plant is the *Schœnus mariscus* and *Cladium Germanicum* of many botanists.

CLA'DIUS, a genus of hymenopterous insects

of the family *Tenthredinidæ*. Antennæ about as long as the body, ciliated beneath; nine-jointed; two basal joints short; third joint with a protuberance beneath the base, and a branch thrown out from the upper side, at the apex; fourth and fifth joints with a similar process; in the sixth and seventh it is rudimentary. In the female all these processes are wanting, except one on the under side of the third joint. Wings with one marginal and three submarginal cells; tarsi simple. Example, *Cladius difformis;* European, but not very common in England.

CLADOCO'RA, a fossil genus of corals allied to Lithodendron, and occurring in the Palæozoic strata.

CLA'DODUS, a genus of fossil Placoid fishes, from the mountain limestone of Armagh, Bristol, &c. (Agassiz.)

CLADO'NIA, a genus of plants belonging to the natural order *Lichénes*. Hooker enumerates only five British species.

C. rangiferina, Rein-Deer Moss, is a frequent plant in Great Britain, on moors, heaths, and mountains. Its botanical characters are very variable, more especially the colour and the length of the ramifications. This plant is the principal support of the rein-deer in its native countries, and hence its common name. In Lapland there is no plant so abundant as this, especially in the pine forests, where it covers the surface of the soil for many miles together like snow. On the destruction of the forests by fire this plant continues to grow, and then reaches its greatest luxuriance. In such districts the rein-deer are principally pastured in the winter, and, whatever may be the depth of snow, these animals are enabled to obtain their food by grubbing with their noses through the snow. The Laplanders are also in the habit of collecting this lichen with rakes in the rainy season, when it is flexible, and readily separates from the ground where it has grown. They then lay it up in heaps, to serve as fodder for their cows. Dr. Clarke and his companions, during his travels in Lapland, were tempted to eat some of this lichen. 'To our surprise,' he says, 'we found that we might eat of it with as much ease as of the heart of a fine lettuce. It tasted like wheat bran. But after swallowing it there remained in the throat and upon the palate a gentle heat or sense of burning, as if a small quantity of pepper had been mixed with the lichen. We had no doubt that, if we could have procured oil and vinegar, it would have made a grateful salad. Cooling and juicy as it was to the palate, it nevertheless warmed the stomach when swallowed, and cannot fail of proving a gratifying article of food to man or beast during the dry winter of the frigid zone. Yet neither Laplanders nor Swedes eat of this lichen.'

C. vermicularis, Vermicelli Lichen, has been found not unfrequent on the loftiest mountains of the north of England and Scotland. The shape of its branches give it the appearance of a bundle of small worms, or of vermicelli. It is a native of South America, where it is used as a stomachic under the name of *Contrayerba blanca*.

CLADYODON. [Thecodonts.]

CLAGENFURT (properly Klagenfurt), the capital of the circle of Clagenfurt, in the kingdom of Illyria, is situated in an extensive plain on the river Glan, in 46° 36′ N. lat., 14° 20′ E. long., and has about 10,000 inhabitants. It is the residence of the Bishop of Gurk, and the seat of the court of appeal for the province of Laybach. There are five squares, three of which are embellished with monuments; one of these is a colossal statue of Maria Theresa. The chief public buildings are—the palace of the Bishop of Gurk; those of the Princes Rosenburg and Porcia; the Burg; the lyceum and gymnasium; the theatre; the Ursuline convent; and normal school. One of the seven churches in the town is remarkable for its fine bold tower, the gallery of which commands an extensive prospect over the town and its picturesque environs. The manufactures consist of fine woollens, silks, and white lead; it has also a considerable transit trade.

CLAIRAC. [Lot-et-Garonne.]

CLAIRAUT, ALEXIS CLAUDE (sometimes spelt Clairault; but we have taken the spelling from the title of his own works), was born at Paris, May 7, 1713. His father, Jean Baptiste Clairaut, was a teacher of mathematics. The early proficiency of the son in mathematics is better attested than in any other similar case, by the actual appearance of his celebrated treatise on 'Curves of Double Curvature,' in 1731, when he was eighteen years of age, accompanied by the usual official recommendations, which prove that it was ready for the press two years before: it is said to have been begun when he was only thirteen years old. He read the 'Conic Sections of De L'Hôpital,' and also the 'Infiniments Petits' of the same author, when he was only ten years old; a fact which we should have forborne to state, had it not been for the evidence contained in the treatise just cited, and in this fact, of public notoriety, that at the age of twelve years he presented a memoir on some remarkable curves to the Academy of Sciences, and removed all doubts as to its authorship by his personal explanations.

In 1731, being then under the legal age, Clairaut was admitted into the Academy of Sciences. He formed an intimate acquaintance with Maupertuis, and commenced at this period his researches on the figure of the earth. In 1736 he accompanied Maupertuis, Camus, Lemonnier, &c., in their expedition to Lapland, for the purpose of measuring a degree of the meridian. This measurement has frequently been considered as of little value. It must however be remarked, that such an opinion has been formed on the strength of discrepancies which were sufficiently apparent to the measurers themselves, and which caused them to review all their operations; as, also, that circumstances connected with local attractions are fully sufficient to explain the whole difficulty. The work of Clairaut 'On the Figure of the Earth' appeared in 1743, and was reprinted in 1808. It contains the remarkable discovery which is usually called Clairaut's Theorem. Considering the earth as an elliptic spheroid, it should seem that the variation of gravity on the surface would depend upon the law of density of

the interior strata. But Clairaut showed that this variation is altogether independent of the law of density, and may be deduced from a knowledge of the form of the exterior surface. In this theorem the second and higher powers of the eccentricity are rejected. Mr. Airy (in an early volume of the 'Cambridge Transactions') has shown that it remains true when the higher powers are taken into account.

In 1750 Clairaut gained the prize of the Petersburg Academy for his paper 'On the Theory of the Moon.' It is more essential for us here to state the position which he occupies among the successors of Newton, than to enter into details which are better suited to other articles. Newton had left one prominent point of the lunar theory altogether unexplained by his theory of gravitation, namely, the motion of the lunar apogee, of which, though able to assign a sufficient reason for the phenomenon of progression, he was not able to deduce more than half the quantity of the phenomenon. Clairaut at first concluded that the law of gravitation was incompletely expressed; but further consideration, and more extensive application of analysis, showed that the whole motion was a necessary consequence of the Newtonian supposition of mutual attraction. In two points of view, therefore, as the first who applied what is now called the modern analysis to the problem of the lunar motion, and as the first who added an unexplained phenomenon to the theory which Newton had left, Clairaut stands in a conspicuous position.

Clairaut was the first who applied the Newtonian theory to the motion of comets, in reference to the perturbation of their motions by the attraction of the planets. In 1757 astronomers began to expect the fulfilment of Halley's prediction relative to the comet whose appearance has since once more excited public curiosity. Lalande proposed to Clairaut to undertake the actual computation of the quantity of Jupiter's action on the comet during a revolution, and offered his assistance in the drudgery of the work. For the manner in which this enormous labour was executed, the reader may consult the article 'Halley's Comet,' in the 'Companion to the Almanack for 1835.'. The result was that Clairaut's prediction came very near the truth. The return of the comet was at first placed in November 1758; in that month Clairaut predicted that it would arrive at its nearest point to the sun about April 13, 1759, stating that he might possibly be wrong by a month. The observed perihelion of the comet was on the 13th of March. The error might have been considerably less if the existence of Uranus and Neptune, and a more correct value of the mass of Saturn, had been known.

The Figure of the Earth, the Theory of the Moon, and Halley's Comet are the three prominent points on which the fame of Clairaut rests. We might mention his work on Geometry, drawn up, it is said, for the use of Madame du Chastellet; his 'Elements of Algebra,' remarkable at the time for the abandonment of the dogmatical form in which it was customary to write elementary works; and many papers in the 'Memoirs of the Academy,' containing several remarkable discoveries in pure mathematics. Clairaut was a man of the world, of high polish, and took great care never to offend the self-love of any one: he was always in the world, desirous to shine, and to unite the man of fashion with the philosopher. Bossut, his personal friend, says that the polished character of Clairaut procured him an *existence* and a consideration in the great world which talent alone would not have sufficed to gain, and more than insinuates that dissipation destroyed his constitution. However this may be, Clairaut died at Paris, May 17, 1765, at the age of fifty-two. He was never married. His father (who survived him a short time) had a very numerous family, of whom only one daughter survived him.

CLAIRON, CLAIRE JOSEPHE LEYRIS DE LA TUDE, a celebrated French actress, was born near Condé, in French Flanders, in 1723. She made her early appearances in the Flemish theatres, and those of the neighbouring provinces of France. In 1743 she was called to the Parisian Opera, and soon afterwards to the Comédie Française. Although now seldom mentioned, no actress of any age or country appears to have been the object of a reputation so wide and an admiration so intense. The prevailing character of her acting was the natural, and in this she was distinguished from her rival, Dumesnil, who was considered the representative of art. Mademoiselle Clairon quitted the Comédie Française in 1765, and died in 1803. Some memoirs relating to her were printed in 1799 by her pupil Mademoiselle Raucourt.

CLAIRVAUX. [AUBE.]

CLAMECY. [NIÈVRE.]

CLAN, in Gaelic *Clann*, which signifies children or descendants. The clans of the Highlands of Scotland are families, or tribes, all the members of which bear the same surname, and are supposed to be descended from a common ancestor, of whom the chief of the clan is the lineal representative. Most of the Highland noblemen and gentlemen have designations peculiar to them as chiefs of their clans, which in their own country no feudal titles or distinctions, however exalted, are allowed to efface. 'Besides his ordinary name and surname,' says Sir Walter Scott (note to 'Lady of the Lake,' canto ii.), 'which was chiefly used in the intercourse with the low-lands, every Highland chief had an epithet expressive of his patriarchal dignity as head of the clan, and which was common to all his predecessors and successors, as Pharaoh to the kings of Egypt, or Arsaces to those of Parthia. This name was usually a patronymic, expressive of his descent from the founder of the family. Thus the Duke of Argyle is called Mac Callum More, or the *Son of Colin the Great*. Sometimes however it is derived from armorial distinctions, or the memory of some great feat; thus Lord Seaforth, as chief of the Mackenzies, or Clan-Kennet, bears the epithet of Caber-Fae, or *Buck's-Head*, as representative of Colin Fitzgerald, founder of the family, who saved the Scottish king when endangered by a stag.'

Since the rebellion of 1745, and the measures

which the government was induced to take in consequence of it, the old spirit of clanship has considerably declined.

CLAPPERTON, HUGH, was born in 1788, at Annan, in Dumfriesshire. He entered the merchant service, was impressed into a man-of-war, where the interest of an uncle procured his advancement to be a midshipman. He distinguished himself in the Mediterranean and in Canada, but in 1817, being then a lieutenant, he was sent home on half-pay. In 1823 he was employed by Lord Bathurst, in conjunction with Dr. Oudney and the late Major Denham, to make a journey to Timbuctoo, in Central Africa. The Doctor died at an early stage of the journey, in January 1824. Proceeding south from Tripoli, on the Mediterranean, by Musfeia, and by Zangalia, on the east of the great Lake Tchad, Clapperton, after great sufferings, reached Saccatoo, where he was obliged to turn back. He and Denham determined the positions of the kingdoms of Mandara, Bournou, and Houssa, and of their chief towns, but they were not able to ascertain the course and termination of the Niger—the main object of the expedition. On the 22nd June, 1825, soon after his return to England, Clapperton was raised to the rank of commander, and engaged almost immediately to start afresh on the same perilous journey. His companions were Captain Pearce, R.N., Mr. Dickson, and Dr. Morrison, a navy surgeon and naturalist. The party was attended by Richard Lander, Dawson, and two or three other servants. This time Clapperton penetrated into Africa from the coast of the Atlantic. The party landed in the Bight of Benin on the 28th of November, 1825, and proceeded inland from Badagry, December 7; but they had scarcely moved from the shore when they were attacked by the usual maladies of the country. After great sufferings, and the loss of nearly all his companions, Clapperton again reached Saccatoo, where he was detained by the king, and died of dysentery on the 13th of April, 1827, at Chungary, a village four miles from Saccatoo.

(*Narrative of Travels and Discoveries in Northern and Central Africa in the Years* 1822, 1823, 1824, by Major Denham, Commander Clapperton, and the late Dr. Oudney, 4to., London, 1826; *Journal of a Second Expedition into the Interior of Africa*, &c., by the late Commander Clapperton, 4to., London, 1829. (To this volume a Memoir of his life is prefixed); *Records of Captain Clapperton's Last Expedition to Africa*, by Richard Lander, 2 vols. small 8vo., London, 1830.)

CLARE, a county of the province of Munster, in Ireland, is bounded N. by the county of Galway, E. and S. by the Shannon, which separates it from the counties of Tipperary, Limerick, and Kerry; and W. by the Atlantic Ocean. The greatest length N.E. and S.W. is 67½ miles; greatest breadth N.W. and S.E., 38 miles. The area is 1294 square miles, or 827,994 acres, of which 455,000 are arable, 296,042 uncultivated, 8304 in plantations, 67,920 under water, and 728 in towns. The population in 1841 was 286,394, of whom 267,907 were in the rural district, and 18,487 in the civic district.

Clare contains a group of mountains, the Slieve Baughta, some of which rise to 2500 feet high, and a mountainous tract of less elevation. Among these mountains occur Lochs Teroig, Graney, O'Grady, Derg, Breedy, Doon, Cloonlea, and many others. The lower lands also contain many lochs or lakes; these, as well as the rivers Blackwater, Fergus, &c., empty their waters into the Shannon. The Atlantic coast presents an almost uninterrupted line of lofty cliffs, against which the sea lashes with great fury: there are scarcely any harbours along this coast. The shore of the Shannon, commencing from Loop Head, has numerous creeks, which might be rendered useful either as asylum harbours or stations of trade; but at present there is no security for vessels of heavy tonnage in hard weather nearer to Loop Head than the anchorages of the Fergus.

The roads of this county are perhaps worse than in any other county of Ireland, which is chiefly attributable to the corrupt system under which the grand jury assessments were formerly applied. The evils of this system are now removed by the appointment of a county surveyor, who superintends the application of the public money, and without whose sanction no presentment can be levied.

The climate is remarkably healthy, and the inhabitants are often long-lived. The eastern districts are rather mild and moist; the western are exposed to violent gales from the Atlantic. The mountain district consists mainly of clay-slate and sandstone formation, surrounded by a limestone plain. Beyond the basin of the Fergus is a clay-slate and trap formation, which extends to the sea. A little iron and coal, and considerable deposits of lead, copper pyrites, and manganese are met with in the county. Very fine black marble and slate also occur.

The characters of the different soils correspond to the characteristic geological division; being cold and moory, warm and friable, deep and loamy, according to the strata beneath. The extent of poor soil is much greater than that of even middling quality; but in some districts there are detached spots of very remarkable richness. These are usually situated along the banks of the large rivers, and are liable to periodical inundations. They are called coreaghs or corcasses, a word nearly synonymous with the English provincial term bottoms. Six tons of prime hay are frequently produced from the Irish acre on these rich levels, and eight tons per acre have been occasionally mowed. Another species of rich grazing land of frequent occurrence here, as well as in Galway, is the turlogh, or periodical lake, an accumulation of water either forced upward by subterranean channels, or formed by surface-waters which have no outlet. These floods lie in the turlogh during the winter, and leave it prepared for the most abundant vegetation in the spring. Notwithstanding its generally sterile appearance, this county is far from being unproductive. Yarrow, white clover, trefoil, cinquefoil, virga aurea, juniper, and yew grow

spontaneously and in abundance, although in patches. The rearing of sheep in the sheep-walks, and the gathering of bog-turf for fuel, are extensively carried on. There is a considerable amount of bog-land in the county. Green crops and artificial grasses have been only lately introduced to any considerable extent. The breed of sheep remains in many districts unimproved, from a prejudice against the mutton of the finer-woolled kinds. The general breed of swine is very inferior. The cattle have within the last few years much improved in quality. The rivers and coasts afford excellent salmon, turbot, cod, haddock, ling, dory, mackerel, whiting, herrings, oysters, crabs, lobsters, and shrimps. Home-made frieze is almost the only manufacture of the county. Grain and pigs are exported to the neighbouring counties.

Clare is divided into 11 baronies. Two members are returned to the House of Commons for the county, and one for the borough of Ennis.

The following are the principal towns, with the population of each in 1841 :—

Clare is a small town situated at the mouth of the river Fergus, which meets the tide-water under the walls of Clare Castle, forming an æstuary at its entrance into the Shannon, which is navigable up to the town of Clare. Clare is the place of export for Ennis and the adjoining neighbourhood. Clare Castle is occupied as a barrack. Population, 879.

Corrofin is a small town, about 10 miles N.N.W. from Ennis, near the lakes of Tadon and Inchiquin. Population, 909.

Ennis, the county town of Clare, is situated on the south bank of the Fergus, about three miles above the town of Clare. Ennis is an ancient town, the chief part of which lies huddled together close to the river, while the modern additions straggle out along the public roads. The court-house, county prison, county infirmary, fever hospital, and union workhouse are the chief public buildings. The parish church is attached to the ruins of a Franciscan abbey, which was founded in 1240. The Roman Catholic chapel is large, and there are meeting-houses for Independents and Methodists. A considerable quantity of agricultural produce is brought to Ennis, whence it is forwarded by lighters for shipment to Clare; and a little business is done in the flannel and linen trade. Ennis returns one member to the House of Commons. Population, 9318.

Ennistimon, or Ennistymond, is beautifully situated on the small river Cullenagh, a short distance from Liscanor Bay, whence the tide-waters run up to Ennistimon. It has an export trade in corn. Population, 2,089.

Killaloe is situated on the west bank of the Shannon, about a mile below the southern extremity of Lough Derg. Killaloe is a bishop's see, to which the diocese of Clonfert was united by 3 & 4 Wm. IV. c. 37. It is a thriving little town, and has regular communication by steamboats up and down the Shannon. A bridge of nineteen arches crosses the Shannon, and connects Killaloe with Ballina, in the county of Tipperary. The cathedral at Killaloe, originally built in 1160, is a plain but massive structure, with a square tower. A large quantity of slate is exported from quarries in the neighbourhood, and there is a mill for sawing marble. Population, 2009.

Kilrush is situated on the northern shore of the Lower Shannon, about 22 miles from the mouth of the æstuary, and near the head of a small creek. There is a new quay, and there are wide streets, good houses, and large corn stores. The town has an ancient church, a handsome modern church, a court-house, custom-house, union workhouse, and market-house. A steamer plies daily between Limerick and Kilrush. Population, 5,071.

Clare originally formed part of Connaught; but about the close of the second century it was included in Munster. About 1168, Clare was divided into two parts, which had separate kings. One of these was instrumental in bringing over the English into Munster in 1171, and many intestine quarrels ensued. In the year 1543, Morrogh O'Brien, after a fruitless attempt at raising a general rebellion with O'Neill, O'Donnell, and O'Connor, came in and made his allegiance to King Henry the Eighth, renouncing the name of O'Brien, and taking the title of Earl of Thomond, with the style of Baron of Inchiquin for his eldest son. From him was descended the family of Inchiquin, many members of which engaged in subsequent wars. An act for the division of Connaught into counties having passed (11 Eliz. c. 9), Sir Henry Sidney (others say Thomas, earl of Sussex) plotted out six counties beyond the Shannon, of which Clare was one. It was divided into baronies, according to the possessions of the principal families. One hundred and seventy-two castles are enumerated in this early survey, of which twenty belonged to different gentlemen of the family of O'Loughlin in the barony of Burrin or Gragans alone. Clare was not much troubled during the civil wars of Charles I. It was not until after the numerous forfeitures, at the settlement of affairs in 1688, that Clare obtained a settled proprietary.

There are round towers on Scattery Island, off Kilrush (120 feet high, a known landmark in the navigation of the Shannon), at Drumcliff in the barony of Islands, at Dysert (the ancient Dysert S'Dea) and Kilnaboy in the barony of Inchiquin, and at Innis Cailtre, an island in the creek of Scariff, on Loch Derg. The abbey of Ennis, the abbey of Quin, and several cromlechs and ancient tombs are met with in various parts of the county.

(*Statistical Survey of the County of Clare;* Beaufort's *Memoir of a Map of Ireland;* Cox's *History of Ireland;* Inglis's *Ireland in* 1834; *Parliamentary Reports and Papers;* Thom's *Irish Almanac;* Frazer's *Handbook for Ireland.*)

CLARE HALL, Cambridge, was established on the site of a former college called University Hall, which had been founded in 1326. University Hall was destroyed by fire in 1342, and was rebuilt by Elizabeth de Burgh, one of the sisters and coheirs of Gilbert, earl of Clare. The new college was called Clare Hall, and she endowed it in 1347 with lands for the maintenance of a master, ten fellows, and ten scholars.

Besides the fellowships on the old foundation, which are called the senior fellowships, three

others were founded by the Earl of Exeter in 1612, two by John Freeman, Esq., in 1522, and four from the estates bequeathed to the college by Joseph Diggons, Esq., in 1658. These nine fellowships are called the junior fellowships, but have nearly the same privileges annexed to them as to those on the original foundation. The nineteen fellowships are open to all persons who may be bachelors of arts, or of a degree higher.

There are, besides the nineteen senior and junior fellows, three by-fellowships, of which one was founded by Mr. Borage, in 1637, for persons of his own name and kindred, or, in default, a Norfolk man; and two by Mr. Philpot, in 1717, for natives of Kent. These three fellows have no voice in college business, can hold no college office, and are incapable of being elected into any other fellowship.

Clare Hall has upwards of 40 scholarships and exhibitions. A prize of 10*l.*, two silver cups of the value of 6*l.* each, and several prizes of books, are given annually. There are 16 benefices in the gift of Clare Hall.

Clare Hall is beautifully situated on the bank of the Cam, over which it has a stone bridge, leading to a vista between two rows of lime-trees. The buildings occupy a quadrangular court, 150 feet by 111 feet. Clare Hall was rebuilt in its present form in 1638. The hall is a fine room 69 feet by 21 feet. The old chapel of Clare Hall, built in 1535, was never consecrated, and no one was ever buried there. The new chapel was begun in 1763, and consecrated in 1769.

(Dyer, *History of the University of Cambridge*; Wilson, *Memorabilia Cantabrigiæ*; *Cambridge University Calendar*.)

CLARE ISLAND. [Mayo.]

CLARE, ST., NUNS OF THE ORDER OF, otherwise called Poor Clares. The Nuns of the Order of St. Clare were instituted by St. Clare, at Assisi, in Italy, according to Newcourt, about A.D. 1212. This Order was confirmed by Pope Innocent III., and after him, by Pope Honorius III., A.D. 1223, and was subsequently divided into a stricter and a looser sort. (Newc. 'Repert. Ecclesiast.,' vol. i. p. 562.) They were brought into England by Blanche, queen of Navarre, who was wife of Edmund, earl of Lancaster, Leicester, and Derby, under a licence from King Edward I., A.D. 1293. There were only four houses of this order in England, viz. in the Minories, London, at Waterbeche and Denny in Cambridgeshire, and Brusyard in Suffolk. (*Monasticon Anglic.*; Tanner's *Notit. Monast.*)

CLARENCEUX, the name of one of the provincial kings-at-arms in the Heralds' College. (Noble's *History of the College of Arms*, 4to., London, 1804, p. 61, et seq.)

CLARENDON, THE CONSTITUTIONS OF, were certain declaratory ordinances agreed to at a general council of the nobility and prelates assembled by Henry II. at his palace or manor of Clarendon, in Wiltshire, in the year 1164. These ordinances were sixteen in number, and were intended to define the limits between civil and ecclesiastical jurisdictions, to prevent the further encroachments of the clergy, and to abolish the abuses which had arisen from the gradual and increasing usurpations of the pope. (Howell's *State Trials*, vol. ii. p. 546.)

CLARENDON, LORD. [Hyde.]

CLARET, a name used in England to denote the red wine of Medoc, or, more correctly, a mixture of that wine with some other more full-bodied. The word *clairet*, from which the name is derived, is used in France to signify those wines which are red or rose-coloured; but the name, as understood by us, is not known in that country.

CLARIFICATION, the process of rendering a fluid clear by separating the substances which, being suspended in it, render it turbid. Isinglass, gelatine, bullocks' blood, and white of eggs are employed for the purpose.

CLARINET, a musical instrument made of wood, similar in shape to the oboe, but of rather larger dimensions, and having a fixed mouthpiece containing a reed, which forms the upper joint of the instrument. In the orchestra three instruments are employed, of different dimensions, namely, a C, a B, and an A clarinet, to play in different modes or keys. The compass is from E in the base to G in altissimo. The clarinet was invented about a century and a half ago, by Denner of Nürnberg. The *Base Clarinet*, and the *Contra-Base Clarinet*, invented by Streitwolf, about twenty years ago, are longer, larger, and deeper-toned instruments than the above.

CLARION, a shrill kind of trumpet, not now in use.

CLARKE, DR. SAMUEL, was born Oct. 1675, at Norwich. He entered, in 1691, at Caius College, Cambridge, and applied with great success to the mathematics. He afterwards went through a diligent course of Biblical reading in the original languages, in the course of which he carefully studied the early Christian fathers. After his ordination he became domestic chaplain to Dr. More, bishop of Norwich. In 1699 he published three essays on Confirmation, Baptism, and Repentance, together with Reflections on Toland's 'Amyntor,' concerning the uncanonical gospels. Two years afterwards followed his 'Paraphrase of the Four Gospels,' which induced Bishop More to present him with the living of Drayton, near Norwich. In 1704 he was appointed to preach the Boylean lecture at Oxford, when he chose for his subject 'The Being and Attributes of God.' The satisfaction which he gave on this occasion led to his re-election the following year, when he read a series of lectures on the Evidences of Natural and Revealed Religion. These discourses were arranged and published as a continuous argument, and passed through several editions with successive improvements.

In 1706 Clarke obtained, through Bishop More, the rectory of St. Bennett's in London. He published in the same year an answer to the treatise of Dr. Dodwell 'On the Soul,' in which that divine contends that it is not immortal until made so by baptism. Clarke at this time published a Latin translation of the treatise 'On Optics,' by his friend Sir Isaac Newton, who in acknowledgment presented him with 500*l.* for his

five children. His patron, Dr. More, next procured for him the rectorship of St. James's, and a chaplaincy to Queen Anne, which induced him to take his degree of D.D.; and it is said that no such logical conflict was ever heard in the schools of Cambridge as that which occurred on this occasion between Clarke and Professor James, who, in concluding, exclaimed, 'Profectò me probe exercuisti!' The theses sustained by Clarke were, that 'no scriptural article of Christianity is contrary to reason,' and that 'free agency is indispensably essential to all moral and religious conduct.' In 1712 he published his edition of Cæsar's 'Commentaries,' in folio, with notes, and some fine engravings. The same year appeared his treatise on 'The Scripture Doctrine of the Trinity,' a work which involved him for the remainder of his life in a controversy, in which his principal adversary was Dr. Waterland.

In 1718 he occasioned a zealous controversy about the primitive doxologies. Dr. Robinson, bishop of London, put forth a pastoral letter, in which he strictly prohibited his clergy from adopting the Arian modifications of Dr. Clarke, charging them, as they hoped to obtain God's mercy, to hold them in great abhorrence, as emanating from a strong delusion of pride and self-conceit. In 1724 Clarke obtained the mastership of Wigston Hospital, and published a volume of seventeen sermons. During his life he published also many other works, mathematical and theological, and an edition of Homer with Latin notes, but the last nine books were not by him. He died rather suddenly in May 1729. His 'Exposition of the Church Catechism,' and 10 volumes of sermons, were published after his death. That he retained to the last his Unitarian views, is proved by his emendations of the Liturgy shortly before his death—the MS. of which is in the British Museum. The moral character of Clarke is admired by all his biographers: his temper was remarkably mild, and his manners modest and unassuming. As a writer he is plain and unaffected; very accurate, but monotonous, tame, and jejune. He was a wary and very skilful disputant, well disciplined in the scholastic logic.

(*Life*, by Bishop Hoadley.)

CLARKE, ADAM, LL.D., a minister among the Wesleyan Methodists, was born in or about the year 1762, of parents residing in the north of Ireland. Of education, properly scholastic or systematic, he appears to have received little or none; but his love of study, displayed while learning the trade of a linen-manufacturer, with a mind eminently devotional, pointed out this young man to the Methodist preachers who frequented his father's house as a person who might be useful in the ministry, among the people with whom his family had formed their religious connection. This led to his being removed to England, and admitted into the school which Wesley had founded at Kingswood, near Bristol. While here, besides the instruction imparted to the students generally, he purchased a Hebrew Grammar, and began the study of that language, which was the commencement of that course of oriental study in which he afterwards spent much time, and made great progress.

In 1782 he became a Methodist preacher, and so continued to the time of his death. In the first twenty years he resided in various parts of the kingdom, but afterwards he lived, for the most part, in or about London, or on a small estate which was purchased for him in Lancashire.

In his ministerial character, he was singularly acceptable and useful. His preaching attracted crowds. He advanced in influence and reputation in the body of Christians to whom he belonged: and for many of the latter years of his life he was regarded as one of the chief lights and brightest ornaments of that religious community. While leading the laborious life of a travelling preacher, he found time for a great variety of discursive reading, as well as for much steady application to his philological studies, especially those of oriental literature. He first gave public evidence of those studies in the year 1802, when he published, in six volumes, his book entitled 'A Bibliographical Dictionary.' This work gave him at once a literary reputation, and had, we believe, an extensive circulation.

He began also about this period of his life to be taken notice of for his acquirements in Biblical knowledge and in oriental literature. On his coming to reside permanently in London, the Bible Society brought him into connection with some of the dignitaries of the church. He was admitted a Fellow of the Society of Antiquaries. The University of St. Andrew's conferred on him the degree of M.A., and afterwards of LL.D. Some time afterwards, he became a member of the Royal Irish Academy.

From the time when he settled in London, he was constantly in communication with the press. The Board of Commissioners on the Public Records selected him to edit Rymer's 'Fœdera,' though his studies had evidently lain in a different direction. Of some works he was only the editor; others he abridged; and he prepared some original works, among which are particularly to be named, 'A Supplement' to his 'Bibliographical Dictionary,' 'Memoirs of the Family of Wesley,' and a work for the assistance of Biblical students.

But there was one great literary undertaking on which, above all, his mind was intent. This was an edition of the 'Holy Scriptures' in the English version, illustrated with a commentary and critical notes, into which he proposed to throw the results of his own Biblical studies, together with much that he might collect from preceding commentaries. The first volume appeared in 1810, and excited no small attention on account of the novelty of some opinions expressed in it respecting the tempter of our first parents. From this period he pursued this work as the main business of his life, till he had completed it, which he did in 1826, when appeared the eighth and last volume.

From 1823, when he left Lancashire, Dr. Clarke resided at Haydon Hall in Middlesex. He died of cholera, Aug. 26, 1832.

CLARKE, EDWARD DANIEL, LL.D., &c., was born at Willingdon, in Sussex, on June 5, 1769. In 1786 he went to Jesus College, Cam-

bridge. Having taken his degree, he was engaged by the Duke of Dorset, in 1790, as tutor to his nephew, Mr. H. Tufton, with whom he made the tour of Great Britain. He published his journal, but without his name, and was very soon ashamed of it. The edition, which was in 2 vols. 8vo., with plates in aquatinta, is now extremely scarce. In the course of 1792 he engaged as a travelling companion to Lord Berwick, with whom he went through France, Switzerland, and Italy. He returned to England at the end of 1793, and acted for some years as tutor in the families of Sir T. Mostyn and the Earl of Uxbridge, or made trips alone to different parts, of all which he kept journals. But in 1799 he set out with Mr. Cripps, a young man of fortune, on a tour to the countries north of the Baltic. This journey, which was at first intended to occupy only six months, was continued through more than three years and a half, during which master and pupil traversed Denmark, Norway, Sweden, Lapland, Finland, Russia, Tartary, Circassia, Asia Minor, Syria, Palestine, part of Egypt, Greece, Turkey in Europe, and finally returned from Constantinople across the Balkan Mountains, through Germany, France, &c., to England. In consequence of their donations to the University of Cambridge, and other merits, Clarke received the degree of LL.D., and Cripps that of M.A. In 1807 Clarke began, at Cambridge, a course of lectures on mineralogy, and at the end of 1808 the University established a regular professorship of mineralogy in his favour. Having been ordained in 1805, he received the college living of Harlton; and about four years later he obtained the living of Yeldham from Sir William Rush, whose daughter he had married in 1806. From this time his life was almost entirely passed at Cambridge or in its immediate neighbourhood. In 1810 he published the first volume of his 'Travels;' the second volume appeared in 1812, the third in 1814, the fourth in 1816, and the fifth in 1819. A concluding volume, edited by Robert Walpole, was brought out after his death, making the sixth volume, 4to. His essays and experiments in physics chiefly appeared in Thomson's 'Annals of Philosophy.'

He died in Pall Mall, London, on March 9, 1822, and was buried in Jesus College Chapel, Cambridge.

(*Life and Remains of Edward Daniel Clarke*, by the Rev. William Otter, M.A., 2 vols. 8vo., London, 1825.)

CLARKSON, THOMAS, one of the most distinguished of the labourers for the abolition of negro slavery, was born at Wisbeach, in 1760. His father was a clergyman, and master of the grammar-school of that town. His first instructor was his father; but he completed his education at St. Paul's School, and at St. John's College, Cambridge. In 1785 Dr. Peckard, the Vice-Chancellor of the university, proposed to the Senior Bachelors of Arts, as the subject of a prize Latin dissertation, 'Is it right to make slaves of others against their will?' Clarkson had the previous year obtained the first prize for a Latin dissertation, competed for by the Middle Bachelors; and his zeal was so excited by the subject proposed to the Senior Bachelors, that he devoted himself to a thorough examination of the facts of slavery, as it existed in the modern world, in the desire to produce something of higher and more universal value than a college theme. His essay was completed, and it obtained the prize. This accidental circumstance determined his whole future course. The Society of Friends had previously made some efforts to procure the suppression of the Slave Trade; but Clarkson saw that the cause was important enough to demand the dedication of a life. Literary ambition was at once merged by him in a righteous feeling of duty. He translated his Essay into English; he gave up the professional career which was open to him by his talents and position; he became an agitator for the suppression of the traffic in human beings; he united himself with Wilberforce and other philanthropists; and after more than 20 years labour in working out one overwhelming idea, amidst the discouragements of interested hostility and more dangerous indifference, his victory was won. It is a painful thing to record that Thomas Clarkson, having not only in the prime of his life had the happiness of witnessing the suppression of the British slave trade, having in his advanced age seen the abolition of negro slavery in the West Indies; and having lived some sixty years after the commencement of his work, had his reputation assailed, and his merits denied, by those who ought to have looked up to him with unbounded veneration as the great out-door worker of the anti-slavery agitation. It is a petty view of human affairs which attempts to isolate the individual efforts of men engaged, according to their several talents and opportunities, in a common cause; and equally petty to dispute who is the originator of any great social movement. It is a matter of useless controversy to inquire whether Clarkson preceded Wilberforce, or Wilberforce Clarkson. Neither would have moved with any success had there not been a public opinion, however feeble, to work upon, which was in existence before the agitation of either. Clarkson however put down and outlived the attempts to overlay his fame by the more brilliant parliamentary reputation of his fellow-worker. He had justice done him at the moment of his great triumph in 1807, in a tribute which will not perish. The noble lines of Wordsworth, 'To Thomas Clarkson, on the final passing of the bill for the Abolition of the Slave Trade,' belong to the history of the man:—

> 'Clarkson, it was an obstinate hill to climb:
> How toilsome, nay, how dire it was, by Thee
> Is known,—by none, perhaps, so feelingly:
> But Thou, who, starting in thy fervent prime,
> Didst first lead forth this pilgrimage sublime,
> Hast heard the constant Voice its charge repeat,
> Which, out of thy young heart's oracular seat,
> First roused thee. O true yoke-fellow of Time,
> With unabating effort, see, the palm
> Is won, and by all Nations shall be worn!
> The bloody writing is for ever torn,
> And thou, henceforth, shalt have a good man's calm,
> A great man's happiness; thy zeal shall find
> Repose at length, firm friend of human kind.'

Thomas Clarkson died on the 26th September, 1846, at Playford Hall, Suffolk.

CLASSIFICATION OF PLANTS. [ENDOGENS; EXOGENS; JUSSIEU.]

CLATHRA'RIA, a genus of fossil plants found in the Wealden strata of Sussex by Dr. Mantell. The stem is reticulated on the surface, and has analogies to *Xanthorrhœa* and the *Cycadeæ*.

CLATHRO'PTERIS, a remarkable genus of fossil ferns, the foliation of which is marked with a quadrangular network of vessels—a rare circumstance in living ferns—such as *Meniscium*. *Clathropteris meniscioides* occurs in the mesozoic sandstone of Hör in Scania.

CLAUDE. *Claude Gellée*, called *Claude Lorraine*, was born at Chamagne, in Lorraine, in 1600. At the age of twelve, being left an orphan, he sought a home at the house of his elder brother, who was in business, as a carver of wood, at Friburg. A love for the fine arts induced him to go first to Rome, and thence to Naples, in spite of his poverty. In about two years he returned to Rome, and studied under Agostino Tassi. His reputation began to extend, and commissions came to him from numerous places, and from many illustrious persons of the principal countries of Europe. He died in 1682.

Claude is an instance of what may be done by a constant and diligent study of nature, and by unwearied manual practice. It was his custom to spend great part of his time, often whole days, from dawn till night, in watching the changes of effect on the earth and sky. He used to make drawings of his pictures in a book, in order to prevent their being pirated. He left six of these registers, which he called his 'Libri di Verità;' one of them, well known by Earlom's engravings, is in the possession of the Duke of Devonshire.

His colouring is rich, powerful, and brilliant; his tints are varied as in nature itself. His aërial perspective is perfect; the fore-ground stands out with the force and brightness of an Italian sunshine; the distance recedes clear and wide, till the blue hills and blue sky meet in harmonious contrast, or melt into the rich, warm, dewy atmosphere of Rome. His composition is a singular union of freedom and symmetry. His figures are very poor, which he freely admitted, saying he sold the landscape and gave away the figures, a trait of modesty which seems in accordance with his mild and amiable character.

CLAUDE, JEAN, born in 1619, at Sauvetat, near Agen, the son of a Protestant clergyman, was brought up to the church. He distinguished himself in controversial learning, and was appointed professor of theology in the Protestant college of Nismes, which place he filled for eight years. He then gave up his chair, and was appointed to the church of Charenton in 1666. In this situation he showed himself by his writings to be one of the ablest champions of the Protestant doctrines. In 1671 he published his 'Réponse au Traité de la Perpétuité de la Foi sur l'Eucharistie,' 2 vols. 8vo. In 1673 appeared his 'Défense de la Réformation, ou Réponse aux Préjugés légitimes de Nicole.' In 1681 Claude had a controversial conference with Bossuet, after which he published 'Réponse à la Conférence de Bossuet.' In 1685 the Revocation of the Edict of Nantes by Louis XIV. obliged Claude to seek refuge in Holland, where he was well received on account both of his talents and his personal character, and the Prince of Orange granted him a pension. He died not long after, in 1687, much regretted by his co-religionists as one of their ablest and most estimable advocates. His style, though simple, was vigorous, being sustained by great logical skill and much erudition. Devèze wrote a biography of Claude, Amsterdam, 1687.

CLAUDE, ST. [JURA.]

CLAUDIA'NUS (CLAU'DIUS) was born at Alexandria, in Egypt, A.D. 365. Of his early life little is known. His first Latin verses were written during the consulship of Probinus, A.D. 395. ('Epist.' iv., vv. 13, 14). In this year he became a dependent of the regent Stilicho, guardian of the two minors, Arcadius and Honorius; and in his poems he sometimes alludes to his soldier's life. Claudian purchased or requited the favour of Stilicho by indiscriminate eulogy.

He seems to have been indebted to Serena, the wife of Stilicho, for a wealthy bride. The nuptials were celebrated at Alexandria; and it seems probable that Claudian and his wife soon after came to Italy. After the war with Gildo he was honoured with a bronze statue ('Præf. in Bellum Geticum,' vv. 5, 6), erected in the forum of Trajan: the inscription which was cut on the statue is still extant. (Orelli, 'Corpus Inscript.,' vol. i. p. 259.)

The death of Stilicho (A.D. 408) was soon followed by the ruin of his favourite; but the particulars of the death of Claudian are not known.

Claudian's poetical merits are considerable. In what may be called the picturesque style he is surpassed by none; he brings out the smallest details of a scene into a vivid and correct form, amplified and ornamented with all the graces of diction.

Claudian's principal poems are, 3 books 'De Raptu Proserpinæ;' 3 books 'De Laudibus Stilichonis;' 2 books 'In Rufinum;' 2 books 'In Eutropium;' 'De Bello Getico;' 'De Bello Gildonico,' &c. The best editions are those of Gesner and Burmann. Claudian is included in Weber's 'Corpus Poetarum Latinorum,' Frankfort, 1833.

CLA'UDIUS NERO, the son of Drusus Nero, the brother of Tiberius, and of Antonia Minor, the daughter of M. Antonius the Triumvir, by Octavia, the sister of Augustus, was born at Lyon B.C. 10. [AUGUSTUS.] In his youth he was sickly, weak, and timid. Little notice was taken of him under Augustus and Tiberius. He was a diligent student, and wrote, with the assistance of Sulpicius Flavius, a history of Rome, in 43 books, which is lost. He also applied himself to oratory, and Tacitus has transmitted to us a favourable specimen of his ability ('Annal.,' xi. 24).

When Caligula, who was the nephew of Claudius, became emperor, he took his uncle as his colleague in the consulship, A.D. 37. Upon the assassination of Caligula, he was dragged from a hiding-place by the soldiers, and was proclaimed by the troops, A.D. 41.

Claudius, who was fifty years of age, began his reign by acts of justice and of mercy. He also embellished Rome; formed an aqueduct for a fresh supply of water to the city; constructed a har-

bour at the mouth of the Tiber, and began the emissary of the Lake Fúcinus. [CELANO.]

He also went over to Britain, which country he first permanently occupied, at least in part, by his generals Plautius and Vespasianus, and afterwards by Ostorius. [BRITANNIA.] Claudius afterwards fell into a state of apathy and imbecility, being entirely governed by his profligate wife Messalina and the freedmen of the palace who were leagued with her. Messalina abandoned herself to the most shameless licentiousness, until the emperor was roused from his torpor by the report of this scandal, and gave orders that she should be put to death. Soon afterwards he married, A.D. 50, his own niece, Agrippina the younger, the widow of Domitius Ahenobarbus, and mother of L. Domitius. Agrippina prevailed on Claudius to adopt her son Domitius, who assumed his step-father's name of Nero, by which he was afterwards known as emperor, and Claudius gave him in marriage his daughter Octavia. Claudius was poisoned by Agrippina A.D. 54, in his sixty-fourth year, after being in possession of the sovereign power for thirteen years and nine months. He was succeeded by Nero. [BRITANNICUS; NERO.]

(Tacitus, *Ann.* xii. &c.; Suetonius, *Claudius*; Tillemont, *Histoire des Empereurs.*)

CLAUDIUS, MARCUS AURELIUS, surnamed GOTHICUS, was born in Illyricum, A.D. 214, served in the army as tribune under Decius, was afterwards governor of his native province under Valerianus, and after the death of Gallienus in 268, near Milan, was proclaimed emperor by the army. He assumed the name of Gothicus in consequence of a victory over the Goths in Mœsia. In A.D. 270, he died at Sirmium, in Pannonia, after a reign of little more than two years, during which he exhibited virtues and abilities that entitle him to be numbered among the best emperors of Rome. He was succeeded by Aurelianus.

CLAU'DIUS, or CLODIUS, ALBI'NUS, a native of Adrumétum, in Africa, served with distinction under Marcus Aurelius and Commodus in various parts of the empire. He was raised to the consulate, together with Pompeianus, the son-in-law of Aurelius, A.D. 176. After the assassination of Commodus and of his successor Pertinax, Didius Julianus was made emperor by the prætorian guards of Rome, but three commanders of the legions abroad, Albinus in Britain, Severus in Illyricum, and Pescennius Niger in Syria, stood forth to dispute his title. Severus marched to Rome, upon which the senate proclaimed him emperor, and Julianus was assassinated by the soldiers. Severus on his march had written to Albinus, proclaiming him Cæsar, and adopting him as his successor. But the new emperor, having overthrown his competitor Pescennius Niger, resolved to rid himself also of Albinus, who, having discovered his intentions, passed over into Gaul, where he was proclaimed emperor. A great battle was fought between Severus and Albinus, near Lyon, in February, A.D. 197, in which Severus gained the victory; and Albinus killed himself.

CLAUSENBURG (Klush, Kolosvár), capital of the principality of Transylvania, is situated on the river Számos, in the midst of a romantic valley, surrounded by mountains, and studded with fields, gardens, and vineyards, in 46° 53′ N. lat., 23° 43′ E. long. Population 20,000. It is inclosed with lofty walls and towers, and is divided into the inner town and six suburbs. It has some handsome streets and houses, and a large market-place, 500 paces long and 360 broad. There are also several churches, the most striking of which is the Roman Catholic cathedral. Clausenburg contains a lyceum; a Roman Catholic gymnasium and seminary; reformed and Greek-Catholic colleges; a Franciscan convent; normal schools; a house of industry; an orphan asylum; two hospitals, and various other charitable institutions; a Casino, and a large national theatre. Clausenburg is the seat of the government of Transylvania. The manufactures are chiefly woollens, earthenware, and paper.

CLAUSTHAL, the most important of the mining towns of the Harz district in Hanover, is an open place built upon two naked eminences, and separated from Cellerfeld (a town of 4000 inhabitants) by the rivulet called Cellbach. It is the seat of administration for the mining districts of Hanover, has about 9000 inhabitants, and stands about 50 miles S.E. of Hanover. The streets are straight and broad, planted with chestnut and lime trees, but very badly paved. The town contains 2 churches, an orphan asylum, a mint, public offices, a mining academy, with collections in mineralogy, a gymnasium, manufactories of ironware, yarn, woollens, &c., and several elementary schools.

CLAVAGELLA, a genus of testaceous acephalous mollusks, established by Lamarck in the 'Hist. Nat. des Anim. sans Vertèbres,' vol. v. and arranged by him under his *Tubicolées*, between *Aspergillum* and *Fistulana*. He described four species, all fossil, and gives the following definition of them:—'A tubular shelly sheath, attenuated and open anteriorly, terminated posteriorly in an ovate subcompressed club beset with tubular spines, the club presenting on one side the one valve fixed in its wall or substance, while the other valve remains free in the tube.'

The first discovered recent species was made known to the scientific world by Mr. G. Sowerby. He detected it among the treasures of the British Museum, invested in a mass of stone. This species he termed *Clavagella aperta*. ('Genera of Recent and Fossil Shells.')

A second species, *Clavagella Australis*, was brought by Mr. Samuel Stutchbury from North Harbour, Port Jackson. The three specimens procured were imbedded in siliceous grit, just beneath low-water mark; their presence was betrayed by the forcible ejection of water from their tubes. This species was described in 1827.

In 1829 a third species, *Clavagella elongata*, Broderip, was found imbedded in a mass of *Astræopora*, a coralline, in the collection of Sir Isaac Lyon Goldsmid.

Besides these, M. Audouin described a recent species, and M. Rang another, apparently *Clavagella rapa*. ('Ann. des Sc. Nat.,' t. xvii. p. 71; Rang's 'Manuel des Mollusques,' 1829.)

On the return of Mr. Cuming from his first voyage, he brought, amongst other most valuable objects, specimens of *Clavagellæ*, one of which contained the perfect animal preserved in spirit. These *Clavagellæ* were submitted to Mr. Broderip for his examination. One was imbedded in a fragment of calcareous grit, and dredged up at a depth of eleven fathoms, at the island of Muerte, in the Bay of Gunyaquil. This is described by Mr. Broderip as the *Clavagella lata*. The other species was from Malta, and is termed *Clavagella Melitensis*. ('Proceeds. Zool. Soc.,' 1834, p. 116. and 'Trans. Zool. Soc.,' vol. i.) Mr. Broderip observes—'It is not impossible from its locality that this latter may turn out to be M. Audouin's species, if it should prove to be a true *Clavagella*.'

To these must be added two species from the Mediterranean, of which one is described by Della Chiaje as *Clavagella Sicula*, the other by Scacchi, as *Clavagella Balanorum*. M. Cailliaud, in an admirable paper published in the 'Magazin de Zoologie,' 1842, and giving the results of his own personal observations on the species collected in the Mediterranean and Adriatic seas, refers the *Clavagella lata* and the *C. Sicula* of Broderip to the *C. aperta* of Sowerby, the differences being the result of age, &c. If so, the distribution of the same species must be extremely wide. In the 'Trans. Zool. Soc.,' vol. i., will be found an elaborate paper by Professor Owen on the anatomy of the *Clavagella lata*, founded on a dissection of the individual brought home by Mr. Cuming. To this paper we can here only refer. Mere extracts from it would be very unsatisfactory, and indeed would fail in conveying information.

With respect to the situation, imbedded in stone, in which the Clavagella is found, Mr. Broderip observes, that we are left to conjecture the causes which operate to determine the animal in its choice of abode, if indeed it can be called choice, for probably the Clavagella is the creature of circumstances; and if, soon after its exclusion from the parent (when Mr. Broderip supposes it to be furnished with its two valves only, and to float free, with perhaps some voluntary impulse), it arrives at the vacant hole of some small *Petricola*, *Lithodomus*, or other perforating testacean, which suits it, one valve soon becomes attached to the wall of the narrow chamber, while the animal proceeds to secrete the siphonic sheath, or tube, to enlarge the chamber according to its necessities, and to form the shelly perforated plate which is to give admission to the water at the practical part of the chamber. Though Mr. Broderip observes that the means by which the excavation is carried on are doubtful, he is inclined to attribute it to some solvent secretion, the true nature of which is not known. In this opinion Mr. Broderip is followed by M. Cailliaud, who adduces many ingenious and forcible arguments in favour of these views, from facts which have come under his own observation.

CLAVELLI'NA, Savigny's name for a genus of Ascidian mollusks (class *Tunicata*), with a gelatinous envelope, supported upon a peduncle, and having a branchial sac without plaits, but not penetrating to the bottom of the envelope. (Savigny's *Memoir upon the Invertebrate Animals*, Paris, 1616; MacLeay in *Linnean Transactions*, vol. xiv. p. 539.)

CLAVICHORD, a musical instrument which preceded the pianoforte. The strings were struck by brass pins, projecting from the remote ends of the keys, instead of by hammers.

CLAVICO'RNES, a name given by Latreille to a subsection of coleopterous insects, of the section *Pentamera*. The insects of this subsection have almost always the antennæ thickened at the apex, the terminal joints frequently forming a club; the joints of the tarsi are usually entire. (Cuvier, *Règne Anim.*, vol. iv. p. 487.)

CLAVI'GERO, FRANCESCO SAVERIO, was born at Vera Cruz, in Mexico, about 1720. He entered the order of Jesuits, and was sent as missionary among the Indians in various parts of Mexico, where he says, in the preface to his work, he spent thirty-six years. After the Jesuits were suppressed by Spain in 1767, Clavigero left Mexico for Italy, and there wrote his History of Mexico, which he published in Italian, 'Storia Antica del Messico, cavata dai migliori Storici Spagnuoli, e dai Manoscritti e dalle Pitture Antiche degl' Indiani,' 4 vols. 4to., Cesena, 1780-1, with maps and plates, which he dedicated to the learned Carli. His work is, upon the whole, the best that has been written on ancient Mexico. Humboldt, Navarrete, and other recent writers, often refer to it. It was translated into English by C. Cullen: 'The History of Mexico,' 2 vols. 4to. London, 1787. Little is known of Clavigero's private life. He died in the Papal State towards the end of the last century.

CLAVIPAL'PI, according to Latreille, the seventh family of Tetramerous Coleoptera. The insects of this family have the antennæ terminated by a perfoliate club; the tarsi are generally furnished with a velvet-like substance beneath, and have the penultimate joint bilobed; in some few the tarsi are simple. Many of the species of this group are found upon fungi, boleti, &c. (Cuvier, *Règne Anim.*, vol. v. p. 155.)

CLA'VIUS, CHRISTOPHER, of Bamberg, entered into the order of Jesuits, and died at Rome, February 5, 1612, aged seventy-five. He was selected by Gregory XIII. to superintend the reformation of the Calendar, in which capacity he had to endure and reply to the attacks of Moestlinus, Joseph Scaliger, Vieta, and others of less note. As a mathematical writer, Clavius is distinguished by the number of his works, the frequency with which they were reprinted, his rigid adherence to the geometry of the ancients, and the general soundness of his views. According to Riccioli ('Chronicon, Nov. Almag.'), the most learned Germans resorted to Rome that they might converse with Clavius, and several were accustomed to say that they would rather be attacked by him than praised by others. 'As Clavius did not possess any great original talent, his works are now of little consequence, except to the mathematical historian.

A complete edition of the works of Clavius was published at Mayence in 1612. The account of the Calendar is in the fifth and last volume.

CLAY, any natural mixture of earths which breaks down or disintegrates in water, and affords a plastic ductile mixture. *Pipe-Clay* is of a grayish white colour, has an earthy fracture, and a smooth greasy feel. *Potter's Clay* disintegrates by exposure to the air; when mixed with sand, it is made into bricks and tiles. *Stourbridge Clay* is of a dark colour; it is extensively employed in the manufacture of crucibles. *Brick-Clay*, or loam, varies much in appearance, texture, and composition; it lies in abundance upon the London clay, and frequently rests upon an interposed bed of sand. *London Clay* is a blueish deposit, often including beds of sandstone. *Plastic Clay* consists of a variable number of sand, clay, and pebble beds, irregularly alternating, lying immediately upon the chalk. *Porcelain Clay* is of various shades of white; it is dull and opaque; occurs friable or compact; feels soft to the fingers, and adheres to the tongue.

Clay is an essential component part of all fertile soils. A clay soil consists of a large proportion of alumina united to silica of various degrees of fineness, and frequently also a portion of carbonate of lime. In rich wheat soils the silica is very fine, and intimately mixed with the alumina. The clay soils in Britain are not in general of this fertile kind. They are of a compact nature, which retains the water; and the various oxides and salts of iron which they contain are mostly injurious to vegetation. Hence they require expensive draining and manuring to render them productive. This has made lighter soils, which are more easily worked, to be generally preferred, although less adapted to the growth of wheat.

Fallowing for wheat is the old system on clay soils, and continues to be so in nine farms out of ten; but it often happens that in a wet season the whole advantage of the fallow is lost; hence the modern systems of rotation are better. Clay land will bear a repetition of the same crops much oftener than lighter lands; but every scientific agriculturist knows the advantage of varying the produce as much as possible, making plants of different families succeed each other. The most profitable management of a stiff wet clay soil, after thoroughly draining it, is to cultivate it on the convertible system; that is, to have it three years in grass and three years under the plough, unless a permanent and good sward can be obtained upon it, in which case it will give the surest return by remaining in grass. The great disadvantage of clay soils in a moist climate like that of Great Britain arises from an excess of water, and the obvious remedy is perfect draining of the subsoil. [DRAINING.] Clay is extensively used in many parts of England to improve light land, by being carried on the surface in considerable quantities. Burnt clay is used as manure. Clay by burning alters its nature; it becomes insoluble in water, and loses its attraction for it; it then resembles silicious sand, and may greatly improve a very strong retentive clay, tempering it and rendering it more porous.

CLAYTON, ROBERT, bishop of Clogher, was born at Dublin in 1695, and educated at Westminster School and Trinity College, Dublin. He was successively appointed to the sees of Killala, Cork, and Clogher. His preferment was chiefly owing to Mrs. Clayton, afterwards Lady Sundon, who was one of Queen Caroline's chamber-women. His first published work was 'An Introduction to the History of the Jews.' This was followed by 'The Chronology of the Hebrew Bible Vindicated' (published in 1747); 'A Dissertation on Prophecy' (in 1749); and 'An Essay on Spirit' (1751). This essay, which was full of the notions contained in what is called the Arian heresy, gave great offence to the Church, and prevented his being promoted to the archbishopric of Tuam.

On February 2, 1756, he made a motion in the Irish House of Lords for the expunging of both the Athanasian and Nicæan Creeds from the Liturgy. The motion created a violent storm at court and out of doors; and when he renewed his attack in the following year, in the third part of his 'Vindication of the Old and New Testament,' &c., the king instructed the lord-lieutenant to bring on a legal prosecution of the bishop; but, before the day fixed for the opening of the proceedings, he was carried off by a nervous fever. He died Feb. 26, 1758.

CLEANTHES was the successor of Zeno of Citium, in the Stoic school, and was himself succeeded by his pupil Chrysippus. Zeno died in B.C. 263 or 259. Cleanthes was a native of Assus in the Troad, and originally a boxer. He came to Athens with three shillings in his pocket, and began to attend the lectures of Zeno. As he had to pay his teacher a small fee, and at the same time to gain his livelihood, he used to draw water for the gardens about Athens in the night, and also grind corn. Cleanthes attended the lessons of Zeno for nineteen years. He was slow of comprehension, but very laborious; and he kept what he got. He was a copious writer; a list of his numerous treatises is preserved by Diógenes Laertius. He died at the age of eighty, or ninety-nine according to Lucian and Valerius Maximus.

Cleanthes is the author of a hymn to Jupiter in Greek hexameters. The last edition is by Coraes, in his edition of the 'Enchiridion' of Epictetus, Paris, 1826, 8vo.

CLEAVAGE, a term employed in geology to indicate a peculiar fossility in certain (especially argillaceous) rocks, which is independent of, and generally meets at a considerable angle, the surfaces of lamination or deposition. Clay slate furnishes the best examples of this phenomenon. [SLATE.]

CLEAVLANDITE (*Albite*) occurs massive and crystallised. Colour commonly white, sometimes gray, greenish, blueish, or red. Hardness, 6.0. Transparent, translucent. Specific gravity, 2.6 to 2.68. Found in Norway, Sweden, Dauphiny, St. Gothard, Scotland, and accompanying felspar in most of its numerous localities, from which it differs chiefly in containing soda instead of potash. Analysis: silica, 70.68; alumina, 19.20; soda, 9.06; lime, 0.23.

CLEF (Fr. *clef*, a key), in Music, a character placed at the beginning of the staff, to give names to the lines and spaces, and determine the acuteness or gravity of each note.

There are three clefs—the *treble*, the *mean* (or c clef), and the *base*. The *Treble Clef* is now only placed on the second line, which it names G. The *Mean Clef* gives the name of C to any line on which it is placed; it is called the *soprano clef* when placed on the first line, the *mezzo-soprano* when on the second, the *alto* or *contra-tenor*, or *counter-tenor*, when on the third, and the *tenor* when on the fourth. The *Base Clef* is now placed only on the fourth line, giving it the name of F. The treble clef is appropriated to female and boys' voices, and to instruments whose scales run high. Of the four kinds of *mean clef*, the first is used for female and boys' voices; the third and fourth for men's voices, also for the viola, the two trombones, and occasionally for the clarinet and violoncello. The *base clef* is appropriated to the lowest male voices, and to instruments the scales of which run deep. The great number of clefs formerly in use rendered music unnecessarily difficult to learn. There is now an increasing tendency to use no other than the Treble, Soprano, and Base clefs.

CLEIDOTHÆ'RUS, a genus of acephalous or bivalve mollusks, established by Mr. Samuel Stutchbury for a shell, the mechanism of whose hinge, connecting the two valves, differs most materially from that exhibited by other bivalves.

Shell bivalve, somewhat pearly, inequivalve, involute, attached by the outside of the larger valve; hinge with a small conical pointed tooth in the free valve, fitting into a corresponding pit in the attached valve. A testaceous rather elongated curved appendage, connected by cartilage, is inserted into a deep cicatrix within each umbo; muscular impressions two in each valve; impression of the mantle entire; ligament external. Example, *Cleidothærus chamoides*, found attached to calcareous rocks near the entrance of Port Jackson. (*Zool. Journal*, vol. v. p. 97, *Tab. Suppl.* xlii., figs. 5, 6, 7, 8; and Mr. G. B. Sowerby's *Genera of Recent and Fossil Shells*, No. xxxii.)

CLEI'STHENES, an Athenian, one of the family of the Alcmæonidæ, was grandson of Cleisthenes, the tyrant of Sicyon. After the expulsion of the Peisistrátidæ (B.C. 510) he headed the democratical party, and made various political changes, the nature of which can only be appreciated, in any degree, by a careful study of that period of Grecian history. (Thirlwall's *Greece*, vol. ii. pp. 73 80; Niebuhr's *Rome*, vol. ii. p. 305, &c., Eng. transl.)

CLE'MATIS, a genus of climbing plants belonging to the natural order *Ranunculaceæ*. The most common species is *Clematis vitalba*, the Traveller's Joy, which runs over the hedges in many parts of England, loading them first with its copious clusters of white blossoms, and afterwards with heaps of its feather-tailed silky tufts. It is however better known from some of the exotic species being favourite objects of cultivation. *C. flammula*, a species with panicles of small white flowers, is among the most fragrant of plants. *C. cirrhosa*, *crispa*, and *florida*, are remarkable for the large size of their greenish white flowers; while the purple or pink bells of *C. viticella*, hanging gracefully from its festooning branches, render that species, when well managed, one of the most elegant and ornamental of climbers. *Atragenes*, Siberian and Alpine plants, with finely cut leaves and delicate purple flowers, considered a peculiar genus by Linnæus, are other species of Clematis. They have a climbing habit, and are occasionally seen in gardens; their stems however are apt to become naked, and they are not so generally cultivated as the species of genuine Clematis.

All these plants are hardy; but they are impatient of damp in winter. The latter circumstance is therefore to be attended to by those who wish to ornament their gardens with them.

CLE'MENCE-ISAURE, a French poetess, born near Toulouse, but at what time has been a matter of much dispute. The first known writer who spoke of her is Guillaume Benoit, a jurist of the 15th century, who says that she instituted the floral games, 'Jeux Floraux,' at Toulouse, which were held yearly on the 1st of May, and that she instituted prizes for those who distinguished themselves in various kinds of poetry. The prizes were a gold violet, a silver eglantine, and a gold marigold. This distribution of prizes continued till the Revolution. [TROUBADOURS.]

CLEMENS, TITUS FLA'VIUS ALEXANDRI'NUS, was born about the middle of the second century. According to St. Epiphanius he was an Athenian, and was educated under some of the most learned men of his time. The last of these teachers was Pantænus, a Christian of Alexandria, whom he succeeded in his school. Here also he became teacher of the catechúmeni, was ordained a presbyter, and appears to have remained during the rest of his life. He is believed to have died about A.D. 220. Among his disciples were Origen, and Alexander, afterwards bishop of Jerusalem. He left many works, in which he has mixed with the precepts of the Christian doctrine and morality, which it was his object to inculcate, much information concerning the learning, philosophy, history, and manners of the heathens. The works of Clemens which have come down to us are:—1. 'Exhortation to the Greeks,' 1 book. This is an exhortation addressed to the heathens to abandon their false gods. 2. 'Pædagógus,' in 3 books. This is a treatise on Christian education. 3. 'Strómateis,' in 8 books. The word 'stromateis' he has used to mean a party-coloured or patch-work, 'opus varie contextum,' from the multifarious kind of information, religious and profane, anecdotical, historical, and didactic, put together without much regard to order or plan. Among the works of Clemens which are lost was the 'Hypotyposeis,' or Commentaries on various parts of the Scriptures, in eight books, mentioned by Photius, who quotes several passages, and severely condemns it as heretical. He also wrote several treatises, 'De Pascha,' 'De Jejunio,' 'De Obtrectatione,' &c., which are lost. Clemens's works were published, with a Latin translation, by J. Potter, 2 vols. folio, Oxford, 1715; and also at Würzburg, 3 vols. 8vo., 1780.

CLEMENT I., or CLEMENS ROMA'NUS, succeeded Anaclétus as bishop of Rome in the

year 92, according to Eusebius, and died in the year 100. He was the author of an epistle written in the name of the church of Rome to that of Corinth, and which was often read in the time of Eusebius in the churches, after the gospels, on account of the excellent precepts which it contains. The epistle of Clement was occasioned by a schism which had broken out at Corinth among the Christians, and is full of sound and charitable advice. It consists of fifty-nine chapters, and is one of the most interesting memorials of the primitive church. There is also a second epistle, which is supposed to be a fragment of some other work, but whether by Clement or by some subsequent writer is uncertain. Both epistles were found at the end of the New Testament in a MS. brought from Alexandria, and were published by Patrick Junius: 'Sancti Clementis Romani ad Corinthios Epistolæ duæ expressæ ad fidem MS. Cod. Alexandrini,' Oxford, 1633; and again by H. Wootton, Cambridge, 1718. A long account of Clement's life, pilgrimages, and martyrdom has been made out by Gregory of Tours, Nicéphorus, and others, entitled 'Acta S. Clementis,' and adopted by Baronius; but it is considered doubtful, even by most orthodox Catholics. It is not quite certain that Clement suffered martyrdom. Several other works have been attributed to Clement, which are evidently apocryphal.

CLEMENT II. to XIV., Popes of Rome. Of these there are only three of whom any distinct account need be given: Clement XI., XIII., and XIV. A sufficient notice of the others will be found under POPES and ROME.

CLEMENT XI., *Gian Francesco Albani*, succeeded Innocent XII. in Nov. 1700. He was then fifty-one years of age, had been made a cardinal by Alexander VIII. He was one of the men of letters who frequented the society of Christina of Sweden, during her residence at Rome. It was with seeming repugnance, and after several days' hesitation, that he accepted the papal dignity. He however took an active part in the political transactions of the period; and he had disputes as to the rights of the church with Austria and with Victor Amadeus, at that time king of Sicily; but the most serious one was with France. It began by his bull 'Vineam Domini,' renewing the interdict which his predecessors had issued against the Jansenists, and declaring their propositions about grace and free will to be heretical; and in 1713 he issued the famous bull 'Unigenitus,' which set the whole kingdom of France, court, parliament, and clergy, in an uproar. This bull condemned 101 propositions of a book by Father Quesnel, entitled 'Moral Reflections on the New Testament;' in which that writer revived several opinions of St. Augustin, St. Prosper, and other old fathers, which sounded favourable to the Jansenistic dogmas of predestination and grace. Father Le Tellier, a *Jesuit*, and confessor to Louis XIV., urged the king in favour of the bull 'Unigenitus,' which was at last registered by the parliament of Paris, after much opposition, and continued for years after to keep up a sort of schism between France and Rome.

Another source of tribulation to Clement proceeded from the disputes concerning the Jesuit missionaries in China, who had gained considerable influence at the court of Pekin. Clement sent, in 1702, Cardinal de Tournon as legate to China, who died at Macao; and he then sent the prelate Mezzabarba as his legate to Pekin, where he was coldly received by the emperor, and was soon dismissed from the celestial empire.

Clement took a warm interest in the expedition of the Pretender, son of James II., in 1715, and furnished him with money. After the failure of that attempt, the Pretender retired to Italy under the name of the Chevalier de St. George, and Clement appointed the town of Urbino for his residence. He also gave him a palace at Rome to reside in, on his marriage with Clementina Sobieski, with an annual pension of 12,000 crowns. Pope Clement died in March 1721.

A fine edition of his decretals, bulls, and constitutions, was published by his nephew, Cardinal Annibale Albani, after his death, 'Bullarium Clementis XI.,' one vol. folio. Clement wrote also several Latin homilies, which he recited on solemn festivals, and which were translated into Italian by Crescimbeni.

CLEMENT XIII., *Carlo Rezzonico*, a native of Venice, succeeded Benedict XIV. in July 1758. He was more distinguished for his piety and private virtues, and for his ineffectual struggle to maintain the old prerogatives of the see of Rome, than for political abilities or knowledge of the world. He strove hard to support the Jesuits, who had become obnoxious to various courts, and who were suddenly suppressed in Portugal, Spain, France, and Naples. All the remonstrances and threats of France and Spain could not induce him to abolish the Order, which he considered as the firmest support of the Roman see. The King of France seized upon Avignon, and the King of Naples upon Benevento; still the pope held firm till his death. The Venetian senate, by a series of decrees passed in September 1768, enforced numerous reforms in ecclesiastical discipline in their own dominions. Clement strongly remonstrated against these innovations: he threatened excommunication, but the senate persisted in its resolutions. The Elector of Bavaria, about the same time, declared that none but his own subjects should hold benefices within his dominions. Maria Theresa made similar enactments in her own states, and she took away the censorship of books from the ecclesiastical authorities, and gave it to the secular magistrates. Tuscany, Parma, and Naples, suppressed convents, and checked the practice of donations and legacies to the church. In the midst of all these blows against the papal authority, Clement died in February 1769. A splendid mausoleum, by Canova, was raised to him by Pius VI. in St. Peter's Church, which is much admired.

CLEMENT XIV., *Gian Vincenzo Ganganelli*, was born at Sant' Angelo in Vado, near Rimini, in 1705. At an early age he entered the order of Franciscans, and was made a cardinal by Clement XIII., whom he succeeded in May 1769. The great question which at that time agitated

the Roman Catholic world was the definitive abolition of the order of the Jesuits. Ganganelli took several years to decide on this important subject, and at last, on the 21st July, 1773, he issued the bull of suppression. Soon after this step, Clement, overcome by labour and anxiety, began to decline in health. About Easter, 1774, he was taken dangerously ill, under suspicious symptoms; he lingered a few months, and died September 22, 1774. A fine monument, the work of Canova, was raised to him in the church of S. Apostoli. The letters published by Caraccioli under the name of Ganganelli are now generally understood to be apocryphal; although the writer has traced pretty faithfully the character and many of the sentiments of that distinguished pontiff.

CLEMENTI, MU'ZIO, was born, in 1752, at Rome. At nine years of age he had made so much progress in music under Cordicelli, that he was appointed to an organist's place in his native city. He afterwards studied under Santarelli and Carpani. Mr. Peter Beckford then brought him to England, where he studied closely. About 1780, he made a continental tour, where his talents as a composer and player were highly appreciated. He brought out piano-forte compositions very rapidly, and stood at the head of his profession.

About 1800, he declined teaching, and commenced as a piano-forte maker and music publisher in London. He was on the Continent from 1802 to 1810. In 1813, he assisted to form the Philharmonic Concerts. He was twice married. He died in 1832, and was buried in the cloisters of Westminster Abbey.

Clementi wrote a large number of sonatas, symphonies, and other compositions, and is ranked as the father of the piano-forte school.

CLEMENTINES. [CANON LAW.]

CLEOMBROTUS I., brother of Agesípolis, succeeded him as king of Sparta. The chief event of his life is the last. In 371 B.C. he commanded in the battle at Leuctra against the Thebans under Epaminondas. Cleombrotus was mortally wounded, and died soon after. (Xenophon, *Hellen.*, v. 4, vi. 4.)

CLEOMBROTUS II., son-in-law of Leónidas, was elected king of Sparta on the expulsion of Leonidas. (Pausanias, iii. 6; Clinton, *Fast. Hel.*, p. 217.)

CLEO'ME, a genus of plants belonging to the natural order *Capparideæ*. *C. gigantea* is a shrubby plant, a native of South America. It is a beautiful plant, but has a disagreeable odour and an acrid taste. *C. rosea* is an herbaceous plant, with beautiful rose-coloured flowers. It is a native of Rio Janeiro. There are about fifty species of the genus Cleome described; many of them are now referred to the genus Polanisia. Most of them are worth cultivating on account of their beauty. (Don, *Gardener's Dictionary.*)

CLEOME'DES, a Greek writer on astronomy. There is some doubt about the age in which he lived; or, which is the same thing, whether the manuscripts remaining which bear the name of Cleomedes were all written by one man, or by two men at different times. The manuscripts which remain are on astronomy, on the doctrine of the sphere, and on arithmetic.

We mean by Cleomedes the one of that name who wrote the work, in two books, 'On the Circular Theory of the Heavenly Bodies.' It is professedly in several parts taken from a writing, or from the public lectures, of Posidonius, who was certainly the contemporary of Cicero. The work in question has considerable historical value; it records the measures of the earth by Posidonius and Eratosthenes, establishes the antiquity of the opinion that the rotation of the moon is equal to her synodical revolution round the earth—had it been the sidereal revolution, it would have been correct. It gives various arguments in proof of the rotundity of the earth, in opposition to the supposition of flat and cubical forms, &c., and from this source the early English writers drew much of what they said on the same subject. It mentions eclipses as having happened without having been predicted in the 'canons;' a proof that something answering to an almanac was in common use. It decidedly suggests the possibility of rays of light being bent by the air. Delambre has made it sufficiently apparent that Cleomedes was not acquainted with the writings of Hipparchus, though he frequently cites opinions and methods which he attributes to him.

CLEO'MENES, the name of several kings of Sparta. Cleomenes I., son of Anaxándrides, although not perfectly sane, succeeded his father, B.C. 519. He expelled the Peisistratidæ from Athens (Herod., v. 63, 64), B.C. 510. Demaratus, the colleague of Cleomenes, accused him of favouring the Medes while on an expedition against the Æginetæ, and obliged him to return home. By the aid of Leotychides, an enemy of Demaratus, and by bribery of the Delphic oracle, Cleomenes succeeded in effecting the abdication of Demaratus. In a war against the people of Argos (about B.C. 491) Cleomenes was victorious, and burnt many of the fugitives alive, in a sacred grove where they had taken refuge. (Herod., vi. 80.) The means by which he had contrived to get rid of Demaratus afterwards becoming known, he was banished into Thessaly, and subsequently to Arcadia, where he endeavoured to stir up the people against the Lacedæmonians. (Herod., vi. 74.) He was ordered to return; and, on his arrival in Sparta, he confirmed the belief of his madness by mortally wounding himself (Herod., vi. 75), B.C. 492.

CLEO'MENES II. succeeded his brother Agesipolis II. B.C. 370. He died B.C. 309.

CLEO'MENES III. married the widow of Agis IV. the reformer. He succeeded his father Leonidas as king of Sparta in B.C. 236. Immediately on his accession he set himself to oppose Aratus and the Achæans, who were endeavouring to draw all the Peloponnesians into their league. [ACHÆI.] The Ephori were averse to the war, and Cleomenes put four of them to death. He attempted to excuse this violence by showing the necessity of restoring the ancient institutions of Lycurgus. He renewed the old Spartan system of education, and himself observed great simplicity

in his mode of life. On the death of his colleague of the house of Proclus, an infant, whose name was Eurydámidas, he shared the kingly power with his own brother Eucleidas. In order more effectually to oppose Aratus, who had obtained the assistance of Antigonus Doson, Cleomenes formed an alliance with Ptolemæus, king of Egypt. The contending parties fought a decisive battle at Sellasia, in Laconica, in which the Lacedæmonians were completely defeated. Cleomenes fled to Egypt, where he was hospitably entertained by Ptolemæus Euérgetes. His son and successor however, Ptolemæus Philópator, soon showed jealousy of the royal guest, and accordingly put him in confinement. Cleomenes killed himself in the third year after his flight, and his body was nailed upon a cross by Ptolemæus Philopator, B.C. 220. He reigned sixteen years. Polybius represents Cleomenes as a tyrant; but Polybius was a native of a city (Megalópolis) which Cleomenes had destroyed, and the support of the Achæan league was a family concern. The attempt of Cleomenes to revive the ancient discipline and institutions of Lycurgus may have been honest, though ill-timed; and his means were often bad. (Polybius, ii. iv. and v.; Plutarch, *Life of Cleomenes.*)

CLEON, of Athens, the son of Cleaénetus, was originally a tanner. Early in life he began to take an active part in the political affairs of Athens. He set himself up as the champion of the mass of the people, as opposed to the rich. In the discussion on the massacre of the Mitylenæan prisoners, 427 B.C., he persuaded the popular assembly to pass a decree, by which all the Mitylenæan prisoners sent to Athens by Paches, and every citizen in Mitylene, should be put to death, and the women and children made slaves. The prisoners, who were at Athens, were massacred the same day to the number of more than one thousand; but the timely remorse of the Athenians prevented the execution of the remainder of the sentence.

In 425 B.C. the Athenians built a small fort at Pylos, in Messenia, under the direction of their general, Demosthenes. The Lacedæmonians made preparations to besiege it, and also threw a body of men into the small island of Sphacteria, which lay at the entrance of the harbour of Pylos. The island was blockaded by the Athenians; but, as it was not taken immediately, Cleon accused the generals of want of activity in pressing the blockade. 'If he were in command,' he said, 'he would soon finish the business.' The people gave him the command, and Cleon brought the Lacedæmonians prisoners to Athens within twenty days, as he had promised. But Cleon had the prudence to take Demosthenes with him as his colleague. The reputation which Cleon gained in this affair completely turned his head, and got him an opinion which he did not deserve. In 422 B.C. he was appointed to oppose the movements of the able Spartan general Brasidas in Macedonia and Thrace. He got possession of Toróne, which Brasidas had left with an insufficient garrison; and he sold all the women and children as slaves, and sent more than 700 men as prisoners to Athens. After taking Galepsus, he moved towards Amphípolis on the Strymon, where Brasidas was. The Spartan sallied forth while Cleon was unprepared; and in the battle that ensued both the Lacedæmonian and the Athenian generals fell, B.C. 422. The remains of the Athenian army returned home. Cleon was apparently a vulgar demagogue. His impudence and dishonesty provoked the satire of Aristophanes, whose play of the 'Knights' was composed with the object of destroying his credit, which had been raised on his success in the affair of Pylos. The victory at Sphacteria took place 425 B.C., and 'the Knights' was represented 424 B.C. Such was the dread of offending Cleon, that no actor was bold enough to personate him on the stage, while the mask-maker refused to give a representation of his face, and Aristophanes was obliged to act in that character himself, supplying the want of a mask by smearing his face with the lees of wine. [BRASIDAS; ARISTOPHANES.]

(*Thucyd.*, iii. 36; iv. 21-40, &c., v. 2-10; Thirlwall's *Greece*, vol. iii.)

CLEO'NUS, a genus of insects belonging to that section of the Coleoptera termed by Latreille *Rhyncophora*, and family *Curculionidæ* (or group *Curculio*, Latreille). Of this genus about a hundred species are known, distributed through Europe, Asia, and Africa. *Cleonus sulcirostris* and *C. nebulosus* are among the British species, which may amount to six or eight.

CLEOPA'TRA, a daughter of Ptolemæus Auletes, king of Egypt, was born about B.C. 69. Her father, who died B.C. 51, left two sons called Ptolemæus, besides Cleopatra and her sister Arsínoe. By her father's will Cleopatra and her elder brother were to be joint sovereigns, but they soon disagreed, and Cleopatra fled to Syria. In B.C. 48, Julius Cæsar, arriving in Egypt, determined to carry the will of Ptolemæus into effect, and to settle the dispute between Cleopatra and her brother. The youthful queen contrived to get herself privately conveyed into Cæsar's presence, and by her fascinating manners completely gained his favour. Though not remarkable for beauty, she possessed great natural abilities, which had been carefully cultivated. She is said to have spoken with facility several languages, besides her native Greek. Cæsar decided that Cleopatra should be restored to her equal share of power. This decision gave dissatisfaction to the young prince and his advisers, and led to an attack upon Cæsar's quarters. After a blockade of some months Cæsar received reinforcements, and completely defeated the king, who was drowned in the Nile. The sovereign power was now given by Cæsar to Cleopatra and her younger brother Ptolemæus. On Cæsar's return to Rome, Cleopatra shortly after followed him, and remained there till his assassination (B.C. 44), when she hastily quitted the city, and returned to Egypt. (Cic. 'Ep. ad Att.,' xiv. 8.)

In the fourth year of their joint reign Cleopatra murdered her brother Ptolemæus. Her connection with Marcus Antonius commenced about B.C. 40, with the interview at Tarsus, in Cilicia, of which Plutarch ('Anton.,' 25-27) has given a minute description. From the time of the meeting at

Tarsus the destinies of Antonius and Cleopatra were united. The voluptuous queen found in Antonius a companion to her taste; and she spared no pains to attract him by all the allurements that her inventive talents could devise.

The return of Antonius to Italy, and his marriage with Octavia, the half-sister of Octavianus, for a time separated him from the Queen of Egypt; but they met again in Syria (B.C. 36). Cleopatra was present at the battle of Actium, B.C. 31, and set the example of flight, which was followed by Antonius. When Antonius killed himself in Egypt, Cleopatra committed suicide in order to avoid the humiliation of being led in the triumphal procession of Octavianus. Most probably she took poison; but the circumstances of her death are somewhat doubtful. Cleopatra at the time of her death was in her thirty-ninth year. She was buried by order of Octavianus with royal honours in the same tomb with Antonius. With Cleopatra ended (B.C. 30) the dynasty of the Greek kings of Egypt, which commenced with Ptolemy, the son of Lagus, B.C. 323.

She had by Julius Cæsar a son, Cæsarion, who was put to death by Octavianus. By Antonius she had three children, Alexander, Ptolemæus, and Cleopatra. Cleopatra, the daughter, afterwards married Juba, king of Mauritania. [ANTONIUS; AUGUSTUS; CÆSAR.]

(Plutarch's *Life of Antonius.*)

CLE'PSYDRA (κλεψύδρα, from κλέπτειν, ὕδωρ). Before the invention of pendulum clocks, it was not unusual in astronomical observations to measure time by the flowing of water, upon a principle which, in its most simple application, resembled that of the hour glass, but which was varied by contrivances for accuracy or ornament.

According to Sextus Empiricus ('Adver. Math.,' c. 21), the Chaldæans divided the Zodiac into twelve parts, or signs, by an instrument of this kind. Thus, having found by trial how much water would flow through a small orifice in a vessel during one day, and divided it into twelve equal parts, the portions of the zodiac which appeared to ascend successively above the horizon, in the times that the several twelfths of that quantity flowed through, were considered as the extents of the different signs. Vitruvius ('De Arch.,' lib. ix. c. 9) ascribes the invention of machines for measuring time by the flowing of water to Ctesibius of Alexandria, and an elaborate contrivance for this purpose is described by him; but it is evident from several passages in Demosthenes that at least rude instruments of the kind were used at Athens before the time of Ctesibius. Scipio Nasica is said by Pliny to have been the first who introduced the clepsydra in Rome. That water-clocks were used in India in the twelfth century is evident from a passage in the Liliwati of Bhascara. (Taylor's 'Liliwati,' Bombay, 1816.)

If a clepsydra have the form of a cylinder, a small orifice being made in the bottom, a scale for showing equal intervals of time by the descent of the upper surface of the water contained in it may be graduated by the formula $\frac{1}{m^2}(2m-1)$: where m denotes any number of equal intervals into which the whole time of the cylinder previously filled with water, emptying itself, is divided; and the formula expresses the fractional part of the whole height of the cylinder descended by the upper surface in one of those intervals.

CLE'PTICUS, a genus of fishes of the section *Acanthopterygii* and family *Labridæ*. Only one species of this genus is known (*Clepticus genizara*), and this is from the Antilles. The generic characters are:—Head obtuse; mouth protractile; teeth minute, barely perceptible to the touch; body elongate, lateral line uninterrupted; dorsal and anal fins covered with scales nearly to their outer margins.

CLERC, SEBASTIEN LE, a French designer and etcher, was born at Metz in 1637. He commenced his career as a civil and military engineer, but settled in Paris in 1665, where, by the advice of Le Brun, he devoted himself exclusively to engraving or etching, an art for which he showed the highest ability.

In 1668 Le Clerc published a 'Géométrie Pratique' in eighty plates, which procured him the notice of Colbert, who gave him an appointment in the Gobelins tapestry manufactory, with apartments in the factory, and a salary of 3000 francs, which after a time he resigned, and worked for the public at large. About 1684 he was elected a member of the Royal Academy of Painting, and in 1693 he was nominated Engraver in Ordinary to Louis XIV. He died at Paris in 1714.

Le Clerc's etchings and engravings are very numerous. They are said to exceed 3000; and his designs are twice as numerous. A complete list of his works, preceded by a memoir, was published at Paris in 1774, by C. A. de Jombert, entitled 'Catalogue Raisonné de l'Œuvre de Seb. le Clerc.' Le Clerc was the author of several scientific works. He published a 'Traité de Géométrie,' a 'Nouveau Système du Monde,' a 'Système de la Vision,' and a 'Traité d'Architecture.'

CLERC, JEAN LE, born at Geneva in 1657, was the son of Etienne le Clerc, and nephew to David le Clerc, both known for several theological works. He travelled in France and England, and at last settled at Amsterdam, where he became professor of philosophy and belles lettres, and of the ancient languages. He wrote a number of books, of which those that made most noise at the time concern Biblical history and theological controversy, such as Latin commentaries on various books of the Bible, 5 vols. fol., Amsterdam, 1710-31; 'Harmonia Evangelica,' in Greek and Latin, fol., 1700; 'Traduction du Nouveau Testament, avec des Notes,' 4to., 1703. These works offended many, from their having a tendency to Socinianism; a tendency made still more manifest by another work generally attributed to him, entitled 'Sentimens de quelques Théologiens de Hollande touchant l'Histoire Critique du Vieux Testament,' followed by a 'Défense' of the same work, 2 vols. 8vo., 1685. In these the author openly attacks the inspiration of the Scriptures, and the very foundation of Revelation. As a critic, Le Clerc published his 'Ars Critica,' 3 vols.

8vo., 1712–30, a work which is much esteemed; and he also edited the 'Bibliothèque Historique et Universelle,' a periodical begun in 1687 and closed in 1693, making 26 vols. 12mo.; the 'Bibliothèque Choisie,' 1712–18, 28 vols. 12mo.; and the 'Bibliothèque Ancienne et Moderne,' 1726–30, 29 vols. 12mo. These literary journals enjoyed a good reputation in their days. His other works were historical, critical, and polemical, some of which were tinged with bitterness and dogmatism. In 1728 Le Clerc suddenly lost the use of his speech through a paralytic stroke. His memory also failed him, and he lingered some years in a state bordering upon idiocy. He died at Amsterdam, January 8, 1736.

CLERGY, a term under which that portion of the population of a country is comprehended who are in holy orders. It is used in contradistinction to *laity*, which comprehends all other persons. Like most ecclesiastical terms, it is of Greek origin, the word κληρικός (clēricus) having been used in the sense of 'appertaining to spiritual persons' by the Greek ecclesiastical writers. From *clericus* comes the word *clerk*, a law term used to designate clergymen, which was anciently not confined to persons actually in holy orders, but was applied to persons possessed of a certain amount of learning.

The distinction of clergy and laity in the Christian church was coeval with the existence of the church itself; for in the apostolic period there were officers in the church specially appointed to discharge the duties of pastors or deacons, and even, as many suppose, bishops or overseers, who had the superintendence of various inferior officers. These persons, though they might not perhaps be entirely relieved from the ordinary duties of life, yet must necessarily have been nearly so, and it is certain that they were nominated to their offices by some peculiar forms. Very early however the distinction became complete. The bishops, priests, and deacons of the Christian church, who were ordained to the office, and supposed to receive a peculiar spiritual grace by devolution from the apostles and from the founder of Christianity himself, soon formed a distinct body of men.

In Christian nations the distinction between ministers of religion and laity has been usually recognised by the state, who have allowed certain privileges or exemptions to the clergy. No inconsiderable share of temporal power, extending not only over the members of their own body, but over the laity, has in most states been conceded to them. In the old German confederation the sovereign power in some of the states was vested in ecclesiastics; while at Rome there has been for many ages an elective head, in whom all temporal and spiritual authority over the states of the church has been vested.

The clergy were before the Reformation in England divided into regular and secular. The regular clergy were the religious orders who lived under some religious rule (regula), such as abbots and monks. The secular clergy were those who did not live under a religious rule, but had the care of souls, as bishops and priests. The phrase *the clergy* now means, in the English and Irish established church, all persons who are in holy orders. The privileges which the law of England allows to the clergy are but a shadow of the privileges which they enjoyed before the Reformation. A clergyman cannot be compelled to serve on a jury, or to serve the office of bailiff, reeve, constable, or the like. He is privileged from arrest in civil suits while engaged in divine service, and while going to or returning from it. (5 Geo. IV. c. 31, s. 23.) The clergy cannot now sit in the House of Commons; nor can a minister of the Church of Scotland. (41 Geo. III. c. 63.) The Roman Catholic clergy are excluded, by 10 Geo. IV. c. 7, s. 9.

In 1831 a parliamentary paper was issued (No. 39), which showed the number of clergymen in the commission of the peace in England. In many counties the proportion of clergymen was one-third of the whole number of justices; in several counties above one-half; in Derbyshire and Sussex there was not one clergyman in the commission, and in Kent only two.

There is an act which forbids farming and trafficking by the clergy (1 & 2 Vict. c. 106), except in certain excepted cases: this act consolidated former acts on this subject.

The act (3 & 4 Vict. c. 86, commonly called the Church Discipline Act) was passed in 1840, 'for better enforcing Church Discipline,' and it repeals the old statute (1 Henry VII. c. 4) under which bishops were enabled to proceed against their clergy and sentence them to imprisonment. The 3 & 4 Vict. c. 86, fixes the mode of proceeding against clergymen of the United Church of England and Ireland for offences against the laws ecclesiastical.

In the Constitutions and Canons Ecclesiastical of 1603, canons 31 to 76 inclusive relate to 'Ministers; their Ordination, Function, and Charge.' By the 76th canon 'no man, being admitted a deacon or minister, shall from thenceforth voluntarily relinquish the same, nor afterwards use himself in the course of his life as a layman, upon pain of excommunication.'

The clergy meet by delegates in convocation at the beginning of every new parliament; but this is now merely a form. [Convocation.] They have still courts in which jurisdiction is exercised touching ecclesiastical affairs and causes matrimonial, and testamentary so far as concerns the granting of probates and letters of administration, and where the church's censures are directed against particular classes of offenders. To them also belongs the whole ecclesiastical revenue in the Established Church of England, with divers fees or customary payments, and to them also the whole regulation of the terms of admission to their order.

The three great classes of the English clergy are the bishops, priests, and deacons. To be admitted into each of those classes requires a peculiar ordination.

England is divided into 10,780 districts, varying in extent, called parishes. Each of these parishes must be regarded as having its church, and one person (or in some instances more than one) who ministers divine ordinances in that church. This person, whose proper designation is *persona*

ecclesiæ, or parson of the church, enjoys of common right the tithe of the parish, and has usually a house and glebe belonging to his benefice. When this, the original arrangement, is undisturbed, we have a parish and its rector; and in other cases the vicar and perpetual curate. [BENEFICE.]

CLERGY, BENEFIT OF. [BENEFIT OF CLERGY.]

CLE'RIDÆ, a family of coleopterous insects (*Tillidæ*, Leach), of the section *Malacodermi*. Characters:—Palpi generally clavate; mandible dentated internally; penultimate joint of the tarsi bilobate; antennæ more or less serrated, or terminated by a club; body generally cylindrical and pubescent; head and thorax narrower than the abdomen; eyes emarginated. Most of these insects are found on flowers, and some on old trees; the larvæ, as far as known, are carnivorous. The principal genera are *Clerus, Cylindrus, Tillus, Priocera, Axina, Eurypus*, and others. (Cuvier, *Règne Anim.*, vol. iv. p. 475.)

CLERK IN ORDERS. [CLERGY.]

CLERK OF ASSIZE is an officer attached to each circuit, who accompanies the judges at the assizes, and performs all the ministerial acts of the court. He issues subpœnas, orders, writs, and other processes; draws indictments; takes, discharges, and respites recognisances; files informations, affidavits, and other instruments; enters every *nolle prosequi*; records all the proceedings of the court, and enters its judgments. He is associated with the judges in the commissions to take assizes; and he is restrained by Statute 33 Hen. VIII. c. 24, from being counsel for any person on his circuit. He is paid by fees which are charged upon the several official acts performed by him; some, by virtue of established usage, and others under various statutes, 55 Geo. III. c. 56; 7 Geo. IV. c. 64; 7 & 8 Geo. IV. c. 28; 11 Geo. IV.; and 1 Wm. IV. c. 58. The fees payable on each circuit will be found in 'Parliamentary Paper,' No. 631, of 1843. (*Parl. Paper*, 1843, No. 631; Wood's *Institutes*.)

CLERK OF THE CROWN IN CHANCERY is an officer of the crown in attendance upon both Houses of Parliament, and upon the great seal. In the House of Lords he makes out and issues all writs of summons to peers, writs for the attendance of the judges, commissions to summon and prorogue parliament, and to pass bills; and he attends at the table of the House to read the titles of bills whenever the royal assent is given to them, either by the queen in person or by commission. He receives and has the custody of the returns of the representative peers of Scotland, and certifies them to the House, and makes out and issues writs for the election of representative peers of Ireland and their writs of summons. He is the registrar of the Lord High Steward's Court for state trials and for the trial of peers; and he is also registrar of the Coronation Court of Claims.

In connection with the House of Commons, he makes out and issues all writs for the election of members in Great Britain (those for Ireland being issued by the clerk of the crown in Ireland); gives notice thereof to the secretary-at-war, under Act 8 Geo. II. c. 30, for the removal of troops from the place of election; receives and retains the custody of all returns to parliament for the United Kingdom; notifies each return in the 'London Gazette;' registers it in the books of his office, and certifies it to the House. By Act 6 & 7 Vict. c. 18, he has the custody of all poll books taken at elections, and is required to register them, to give office copies or an inspection of them to all parties applying, and to prove them before election committees. He attends all election committees with the returns of members; and, when a return is to be amended in consequence of the determination of an election committee, he attends at the table of the House to amend it.

He is an officer of the lord high chancellor, not in his judicial capacity, but as holding the great seal; and in this department he makes out all patents, commissions, warrants, appointments, or other instruments that pass the great seal, except patents for inventions, and other patents and charters which are passed in the Patent Office. He also administers the oaths of office to the lord chancellor, the judges, the serjeants-at law, and all other law officers, and records the same in the books of his office. For these several duties he receives a salary of 1000*l.* a year, under 7 & 8 Vict. c. 77.

The office of the Clerk of the Crown is commonly called the Crown Office; but there is also an office in the Court of Queen's Bench called the Crown side of the Court, of which there is a Master and other officers.

(*Parl. Report*, No. 455, *of Session* 1844.)

CLERK OF THE HOUSE OF COMMONS, the chief officer of that House, is appointed by the crown for life, by letters patent. Upon entering office he is sworn before the lord chancellor 'to make true entries, remembrances, and journals of the things done and passed in the House of Commons;' in which duties he is aided by the clerk-assistant and second clerk-assistant. These three officers are commonly known as 'clerks at the table.' The chief clerk signs all orders of the House, endorses the bills, and reads whatever is required to be read in the proceedings of the House. He is also responsible for the execution of all the official business of the House, which is under his superintendence. In the patent he is styled 'Under Clerk of the Parliaments to attend upon the Commons;' whence it is inferred that, on the separation of the two Houses, the Under-Clerk of the Parliaments went with the Commons, leaving the Clerk of the Parliaments in the Upper House. His salary is 3500*l.* a year, that of the clerk-assistant 2500*l.*, and that of the second clerk-assistant 1000*l.*; but under Act 4 & 5 Wm. IV. c. 70, the salaries of the first two offices will be reduced to 2000*l.* and 1500*l.* respectively, on the first vacancy. (Hatsell, *Precedents*, vol. ii. p. 251; May, *Proceedings and Usage of Parliament*, p. 157, and Index.)

CLERK OF THE PARLIAMENTS is the chief ministerial officer of the House of Lords. His duties (which are executed by the clerk-assistant and additional clerk-assistant) are to take minutes of all the proceedings, orders, and

judgments of the House; to sign all orders, to endorse bills, to swear witnesses at the bar, to wait upon the queen when she comes to give the royal assent to bills, and to take her command upon them and to signify the royal assent in all cases, whether given by the queen in person or by commission. He is also sent occasionally with a master in chancery as a messenger from the Lords to the Commons in the absence of another master. Besides these and other special duties, he is charged with the general superintendence of the official establishment of the House of Lords. He is paid out of the Lords' Fee Fund, of which no account is ever given. (May, *Proceedings and Usage of Parliament.*)

CLERK OF THE PEACE is an officer attached to every county or division of a county, city, borough, or other place in which quarter-sessions are held; he is the ministerial officer of the court of quarter-sessions. He is appointed by the Custos Rotulorum of the county, and holds his appointment during good behaviour. Before he enters upon his duties he takes an oath that he has not paid any thing for his nomination.

The Clerk of the Peace may execute the duties of his office either personally, or by a sufficient deputy approved by the Custos Rotulorum. He or his deputy must be constantly in attendance upon the court of quarter sessions. He gives notice of its being holden or adjourned; issues its various processes; records its proceedings; and performs all the ministerial acts required to give effect to its decisions. During the sitting of the court, he reads all acts directed to be read in sessions; calls the jurors, and parties under recognisance; presents the bills to the grand jury and receives them again; arraigns prisoners, administers oaths, and receives and records verdicts. Whenever prosecutors decline any other professional assistance, he is required to draw bills of indictment, for which, in cases of felony, he can charge 2*s.* only; but in cases of misdemeanour he may charge any reasonable amount for his service.

In addition to these general duties he has other special duties imposed upon him by different statutes, in regard to the summoning of juries, the appointment of sheriffs and under-sheriffs, the enrolment of rules of savings' banks and friendly societies, the custody of documents required to be deposited with him under standing orders of the Houses of Parliament, and other matters.

(Dickinson, *Quarter-Sessions;* Burn, *Justice of the Peace.*)

CLERK, JOHN, of Eldin, in Scotland, was the presumed inventor of that manœuvre in naval tactics which is technically called 'breaking the line,' of which an account is given in his work entitled 'An Essay on Naval Tactics,' &c., in four parts. The first part was printed in 1782; it was reprinted and published in 1790, and the three following parts were added in 1797. The manœuvre was practised by Admiral (afterwards Lord) Rodney in 1782, when it resulted in a decisive victory over the French fleet under De Grasse, in the West Indies: and it has been subsequently adopted by the most distinguished British admirals, Howe, Nelson, and others, with the highest success.

The friends of Mr. Clerk assert that the plan was, in 1780, communicated to Mr. Atkinson, a friend of Rodney, and that the admiral expressed his intention of adhering to it in the event of being engaged with the enemy; but the assertion has been disproved, in his 'Memoir on Naval Evolutions,' by Lieutenant-general Sir Howard Douglas, whose father, the late Admiral Sir Charles Douglas, was Rodney's Captain of the Fleet at the time of the action. From letters and other documents Sir Howard shows that Mr. Clerk's essay could not have been communicated to Admiral Rodney before the engagement, and he proves that the passing of the British ships through the enemy's fleet was a measure suggested by his father on the appearance of an interval in the line.

It is singular that Mr. Clerk, whose essay abounds with valuable precepts relating to naval tactics, had never made a sea-voyage.

(*Edinburgh Review*, vol. vi. p. 301.)

CLERKS AND SERVANTS. [SERVANTS.]

CLERMONT-FERRAND, the capital of Basse-Auvergne and of the department of Puy-de-Dôme, in France, stands at the entrance of a vast semicircular plain, hemmed in except towards the east by a line of hills clothed with woods and vineyards, behind which springs up the majestic peak of the Puy-de-Dôme. To eastward the view extends for about 25 miles over the beautiful district of Limagne. [AUVERGNE.] The town, built close to a mountain torrent, which, rising in the Puy-de-Dôme, flows into the Allier, stands at a distance of 237 miles S. by E. from Paris, in 45° 46′ N. lat., and 3° 5′ E. long., and has 35,152 inhabitants.

In approaching the town from Paris, the traveller passes through the suburb of Montferrand, which is united to Clermont by a noble avenue, two miles long, perfectly straight, and bordered with willows and walnut-trees. Clermont itself, built on an eminence, forms, when viewed at a little distance, a noble termination to this avenue, and inspires the traveller with a notion of beauty which the interior of the town does not keep up. It is not well laid out; the streets are narrow, and the houses, though not ill built, yet present, from the dark colour of the lava, which is the chief building material, a sombre appearance. The town is separated from the faubourgs by a line of boulevards, which are for the most part planted with trees. The Place-du-Taureau is remarkable for a handsome fountain in form of an obelisk, dedicated to the memory of General Desaix. This Place and those of Poterne and L'Espagne command most agreeable prospects: that of Delille, or Champleix, is adorned with a Gothic fountain, richly sculptured.

Of the public buildings the principal are—the cathedral, which dates from A.D. 1248; it is in the centre of the city, and, though it has never been completely finished, is regarded as one of the finest monuments of Gothic architecture in France: and the church of Notre-Dame-du-Port, which is curiously decorated and very ancient, many

of its parts dating from the time of the original construction, in A.D. 863. The other remarkable objects at Clermont are the public library, which contains 18,000 volumes; the botanical garden; the secondary school of medicine; the royal college; the museum of natural history, mineralogy, and antiquities; the house in which Pascal was born in the Rue St-Gènes; the theatre; town-house; court-house; the buildings in which the corn and linen markets are held; the two large hospitals; and the numerous promenades in the town and its environs. In the Place Jaude there is an intermittent fountain, the waters of which are advantageous in fevers and diseases of the digestive organs. In the suburb of St. Alyre, a fountain gives birth to a little stream which deposits such a quantity of calcareous and ferruginous sediment as gradually to raise its bed to a level with the surface of the fountain, when of course the waters would flow in a new channel and with the same result. But, to prevent the ground from being covered with these petrifactions, the bed of the stream is destroyed from time to time. Once only the process was suffered to go on to the last degree, and the result was a level wall 13 feet broad, 262 long, and with a height varying with the slope of the ground.

Clermont is the seat of a bishop, whose see comprises the department of Puy-de-Dôme. It is also the seat of a University Academy, including under its jurisdiction the departments of Allier, Cantal, Haute-Loire, and Puy-de-Dôme, in which there are 8 royal and 12 communal colleges, 30 boarding schools, 4 normal schools, and 1123 day schools. The town is also the headquarters of the 19th military division, which includes the department of Corrèze and those above mentioned. It has also tribunals of first instance and of commerce, an exchange, and a consultative chamber of manufactures.

Woollen cloth, consisting of piece-dyed goods for the home market and for exportation to the Levant, jewellery, and plated goods are the chief industrial articles; but silk stockings, room-paper, cotton yarn, painted glass, and various other articles are manufactured. The town has also a large commerce in the linen of Auvergne, corn, hemp, wool, flax, hides, wine, oil, salt, dried and preserved fruits, cattle, cheese, and various other objects of local industry.

The plateau of Gergovia, some five or six miles to the south-east of the town, is considered to be the Gergovia from which Julius Cæsar was obliged to retire in his campaign against Vercingétorix. ('Bell Gall.,' vii.)

(*Dictionnaire de la France.*)

CLERMONT-LODEVE. [HE'RAULT.]

CLERMONT-OISE. [OISE.]

CLERY-SUR-LOIRE. [LOIRET.]

CLEVELAND, CLEIVELAND, or CLEAVELAND, JOHN, was born in Leicestershire in 1613, and studied at Cambridge. He distinguished himself as an active cavalier in the Civil War, and as one of the most bitter lampooners on the Roundheads. He died in London in 1658. His few love-poems possess occasional richness of fancy, but are deformed by conceits. The most complete edition of Cleveland's works appeared in 8vo. in 1687.

CLEVES, the most north-westerly district of the kingdom of Prussia, and part of the old duchies of Cleves and Guelderland, is a circle in the Prussian Rhein-Provinz. It contains about 185 square miles, and has about 45,000 inhabitants. Cleves is bounded E. by the Rhine, N. and W. by Holland. The surface is level, and the soil, though very sandy in many parts, has in general been rendered extremely productive by careful cultivation. In the western part of the circle lies the extensive Reichswald, or Forest of Cleves: 31,000 acres of this circle are occupied by woods and forests; the remainder is arable, meadow, or pasture land. The produce is chiefly wheat, rye, barley, oats, buckwheat, peas and beans, potatoes, cloverseed, butter, and cheese. The manufactures are cotton-yarn, woollens, silks, cottons, linens, cutlery, leather, &c.

CLEVES, the capital formerly of the duchy, and now of the circle, of Cleves, is pleasantly situated on the Kermisdahl, about 4 miles from the Rhine, with which it communicates by a canal. The population is 7500. It is walled, well built, and divided into the Upper and Lower towns; but, the Upper being built on three hills, the streets are steep and irregular. It contains a cathedral, a Catholic church, three Protestant churches, a synagogue, and a royal palace, called the Schwanenburg, the tower of which, built by the Duke of Cleves in 1439, forms a stately ornament to the town. Cleves possesses a high school, three hospitals, a house of industry, and house of correction. The manufactures consist of yarns, cotton-goods, silks, woollens, flannels, stockings, linens, tobacco, brass-ware, &c.

CLICHY-LA-GARENNE. [SEINE.]

CLIENT (*Cliens*), supposed by some writers to be derived from the verb *clueo;* but the derivation is somewhat doubtful. From the origin of ancient Rome, there appears to have existed the relation of patronage (patronatus) and clientship (clientela). The cliens may perhaps be compared with the vassal of the middle ages. Dionysius ('Roman Antiq.,' ii. c. 9) has given a summary of relation of patron and client.

When a man manumitted a slave, he became the patron (patronus) of the person, who was thus made a free man (libertus), and he had certain rights with respect to the freedman.

The relationship existing at Rome between patron and client facilitated the formation of similar relations between foreigners and Roman citizens; the foreigner thus obtained a protector and perhaps a friend, and the Roman increased his influence by becoming the patron of men of letters and of genius.

(Niebuhr, *Rom. Hist. Trans.*, vol. i. p. 316, &c., and the references in the notes; Becker, *Handbuch des Röm. Alterthums*, vol. ii.)

As a Roman client was defended in law-suits by his patron, the word client is used in modern times for a party who is represented by a hired counsellor or solicitor. The term Patron is also now in use: the present meaning of the word requires no explanation.

CLIFTON. [BRISTOL.]

CLIMATE is a word which has been transplanted from the Greek into every modern European language. The Greek word κλῖμα (from κλίνω, to incline) seems originally to have been used to express the apparent inclinations of the heavens towards the horizon; the plural *climata*, was used to express the zones into which the Greeks supposed the sphere to be divided parallel to the equator, and were somewhat equivalent to modern parallels of latitude; but, by degrees, the climate has been made to designate, not only the greater or less degree of heat which a country is subject to, but also the quantity of moisture in its atmosphere, and, in general, all the phenomena which affect vegetation, and render a country a fit abode for men and animals.

The latitude of a place is the principal circumstance in determining its temperature. Countries lying under the equinoctial line are subject to the greatest comparative heat, which constantly decreases with the increase of distance from that line. This general rule is true for all the countries which lie between the tropics and the pole; but it is not strictly correct within the tropics; there being slight deviations from this rule. In point of fact, the countries in which the greatest degree of heat is experienced lie near the tropic of Cancer. They are the countries on the banks of the Senegal, the Tehama of Arabia, and Mekran in Beloochistan.

It remains however a question whether the *mean* temperature of places near the tropic is greater or less than that of places near the equator. During nearly eight months of the year the solar rays fall on the equator less obliquely than on the countries near the tropics; but, in the other four months, there is a greater degree of heat near the tropics. Though the *mean* temperature differs greatly in different latitudes, the most *intense* heat which is experienced in all countries between the equator and 60° of latitude is nearly equal. The thermometer rises almost every year at St. Petersburg above 90; and it is observed that even on the coast of Guinea, and on the banks of the Senegal, it rarely exceeds 95°.

Near the tropics and the equator there are mountains which, owing to their great elevation, are covered with snow all the year round. The heat experienced in a given place not only depends on the greater or less obliquity of the rays of the sun, but also on the greater or less column of the atmosphere. The column of air is greatest on the surface of the sea and in such countries as are nearly on a level with it. The higher we rise above this level the more the air is rarefied, and the degree of heat due to the solar rays decreases. Thus we at last arrive at an elevation where the heat, even under the equator, is insufficient to melt the snow. This limit has been called the snow-line, or line of perpetual snow, or line of perpetual congelation. This snow-line is found in warm countries, at a much higher elevation than in cold countries. In the Andes of South America, near the equator, the summit of a mountain rising to less than 16,000 feet does not attain the snow-line; but in Norway, in 60° of lat., mountains with an elevation of 5000 feet are always covered with snow; and in the southern hemisphere the line of perpetual snow in the Straits of Magalhaens (52° S. lat.) is, according to Captain King, about 3500 or 4000 feet above the sea. At about 80° of N. lat. the snow-line is considered to come down to the surface of the earth. High table-lands have a higher temperature than isolated mountains of the same height. Humboldt thinks that this difference may be accounted for by supposing that the temperature of the atmosphere, under these circumstances, is considerably raised by the reflection of the solar rays from a plain of considerable extent.

The nature of the soil, the prevailing winds, the quantity of moisture, the electrical state of the atmosphere, and the physical character of the adjacent countries and seas, all modify the temperature which would be due to latitude and elevation.

With regard to the soil, it is a well-known fact that the temperature of countries whose surface is covered with sand is higher than that of those in which it consists of clay or other compact soils; where the soil has been cleared and brought into cultivation, the air is much drier and warmer in summer than in those tracts which remain covered with swamps and marshy grounds. With respect to wind, not only does every change of wind affect the thermometer, but this action is more intense with some winds than with others, and in some latitudes than in others. As regards *moisture*, it is found that countries whose atmosphere is more loaded with clouds and vapours than that of others in the same parallel must have warmer winters and colder summers. This difference is observed all over the world, and from it arises the difference of climate in maritime and continental countries. It is even observed in countries which are at no great distance from one another.

Whenever a wind is stirring, it brings the colder or warmer air from one country to another near it, and thus lowers or raises the temperature of that country to which it blows. This effect is very perceptible on the eastern shores of England with respect to the easterly winds, which blow from the German plains very cold in winter, and highly heated in summer. A similar effect is produced by seas similarly situated. This has been long ago shown by the phenomena of land and sea breezes. It has also been ascertained that the proportion between the temperature of the sea-water and the atmosphere above it is not every where the same, but that in some parts the sea-water is warmer than in others under the same latitude. Now the temperature of the water must in some degree affect the temperature of the atmosphere; and this atmosphere, when brought into contact with the air of the land by the winds, must produce a change in its temperature. The temperature of the Mediterranean is higher than that of the water of the Atlantic in the same latitude; the temperature of Western Europe is higher than that of Asia or America, in similar latitudes; and it is supposed that the temperature of the water beneath, influenced by the gulf stream of warmish water, may be one cause of these differences. [ATLANTIC OCEAN.]

There are other circumstances, besides those enumerated, which affect the general temperature, but their influence is confined to small tracts. It may suffice to say that the real temperatures do not accord with the latitudes, although they approximate thereto. For the lines of equal temperature, see ISOTHERMAL LINES.

The second chief constituent of climate, the moisture of the air, appears under the form of rain, vapour, fog, and dew. With respect to the rain, there are extensive tracts of the globe on which rain is never known to fall, or only at intervals of many years, and then only in small quantities. These countries are always found near the tropics, and may be said to run like two belts round the globe, dividing the countries on each side of the equinoctial line from the temperate zones. The rainless regions are in some parts rather irregular in direction, and vary in width. Between the two belts formed by the rainless regions are situated those countries which are subject to the equatorial rains. The ocean also has these rains in a small degree in those parts which constitute the region of calms. Here the phenomena of the atmosphere succeed one another with great regularity. The sun rises in a cloudless sky: towards noon some faint clouds appear near the horizon, which rapidly increase in extent and density, and are soon followed by thunder and violent gusts of wind, accompanied by heavy rains of short duration: towards evening the clouds disappear, and the sun sets in a serene sky of a deep blue hue. Those parts of both continents which lie on each side of the equator between the rainless regions have the greatest quantity of rain, and this occurs at certain periods of the year, whence these rains are called periodical rains. Countries that lie between 5° and 10° of lat. have commonly two rainy and two dry seasons. Countries more than 10° or 12° from the equator have only one rainy and one dry season. The regions which lie between the rainless regions and the pole are subject to the variable rains, which fall so irregularly that their explanation has not yet been brought under any theory.

The influence of vapours, fog, dew, and electricity, in modifying climate, are difficult questions, the solution of which must depend on future and well-conducted observations.

CLIMAX (κλῖμαξ, a step or ladder) is commonly called a figure of rhetoric, but it is properly only an artifice of style. In accordance with the primary meaning of the Greek word, a climax in composition is a mode of expression by which the writer mounts, as it were, from one clause to another, as if he were climbing a series of steps. In other words, each clause expresses a higher degree of that which is stated in the preceding clause. The three words which Suetonius records to have been uttered on occasion of one of his victories by Julius Cæsar—'I came, I saw, I conquered'—form a climax.

CLINTON, DE WITT, is noted chiefly as the persevering promoter of the project for the formation of the great canal from Lake Erie to the Atlantic. He was born in 1769, at Little Britain, in the state of New York, and received his education at Colombia College, New York, and was admitted to the bar. In 1797 he was elected, by the democratic party, to the state legislature of New York. During the period between 1817 and 1826, he was several times elected governor of the state of New York by the zealous exertions of the democratic party. His productions consist of his speeches made on various occasions in the performance of his official duties; papers read before literary and benevolent societies; correspondence concerning the canal; judicial opinions, and various fugitive compositions. He died suddenly in 1828.

CLINTONITE (*Seybertite, Holmesite*) occurs crystallised, and in imperfectly crystallised masses. Colour copper-red, reddish brown, yellowish brown, and reddish white. Hardness, 4.5. In thin laminæ sometimes transparent. Specific gravity, 3.098. Found at Amity, in the state of New York. Silica, 17.0; alumina, 37.6; magnesia, 24.3; lime, 10.7; protoxide of iron, 5.0; water, 3.6.

CLI'NUS, a genus of fishes of the section *Acanthopterygii* and family *Gobioidæ*. It forms one of the subdivisions of the Blennies, or rather of the group called by Cuvier *Les Gobioides*. [BLENNIUS.] (Cuv., *Règne Anim.*, vol. ii. p. 238.) Cuvier says that *Clinus* is the name of the Blennies among the modern Greeks.

CLIO. [MUSES.]

CLIO, CLIO TRIBE, CLIO'NIDÆ, a family of naked marine mollusks, placed by Cuvier in his class *Pteropoda*, that is, wing-footed mollusks, so called because they are constructed for moving through the waters which they inhabit by means of expanded fin-like membranes, placed on each side of the head. Some, as the *Clio*, so abundant in the northern seas, are covered with a contractile envelope, but others are destitute of a mantle. Some, as the *Hyalæa, Spiratella*, and *Cleodora*, have a mantle protected by a shell.

Genus: Clio. Body free, naked, more or less attenuated posteriorly, without any other fins than the lateral appendages; head very distinct; provided with six very retractile conical appendages, endowed with prehensile power, which are divided into two groups of three each, and capable of being entirely concealed in a sort of hood, bearing a small tentaculum on its external side; mouth terminal and vertical; a sort of sucker or rudiment of a foot between the roots of the wings or fins. Vent and termination of the reproductive apparatus situated at the right side of the neck, at the junction of the fin with the trunk. Body inclosed in a contractile sac. Eyes sessile, on the back of the neck. Respiratory organs supposed to be identical with the uniform appendages, which, as stated, are the organs of locomotion; their muscular fibres are covered with a vascular network. With respect to the eyes, their existence is doubted by some. De Blainville asserts their presence, and so does Rang: they are two in number, extremely minute, but are very complete in structure. ('Anatomische Untersuchungen über die Clione Borealis,' by D. F. Eschricht, Copenhagen, 1838, 4to.) The mouth is armed with jaws of a singular conformation, and the tongue is covered with sharp horny spires.

Species: *Clio Borealis* (*Clione*, Pallas). This species abounds in the northern seas, associated in dense troops, and spreading over leagues of ocean, which seems alive with them as they sport and gambol. They constitute a great portion of the food of the Greenland whale. Length, one inch.

Clio Australis, a native of the cold latitudes of the southern ocean.

Genus: *Pneumodermon*. This genus differs from *Clio* in the following particulars:—Body oval; gills in the form of little leaves, disposed in two lines on the dorsal surface of the posterior part of the body; aliform paddles small. Mouth furnished with two small lips, and two bundles of numerous tentacles, each terminated by a sucker; a little fleshy lobe below the mouth. (Cuvier.)

Species: *Pneumodermon Peronii*, Cuv.; discovered by Péron in the Atlantic Ocean. Length, one inch. MM. Quoy and Gaimard brought home specimens from the Australasian seas.

CLISSON. [LOIRE-INFE'RIEURE.]

CLITHEROE. [LANCASHIRE.]

CLITUS, or CLEITUS. [ALEXANDER III., THE GREAT.]

CLIVE, ROBERT, LORD, was born on September 29, 1725, at Styche, near Market Drayton, Shropshire. He was sent to India, and arrived at Madras, in the civil service, as a writer, in 1744. Three years after, he quitted the civil service of the E. I. Company for the military. In 1748 he distinguished himself at the siege of Pondicherry, and on other occasions; and the taking of Arcot, and the decisive victory gained by the British there, were chiefly owing to this young and comparatively inexperienced officer. On his return to England in 1753 for the recovery of his health, he was highly complimented by the Directory of the East India Company. In 1755 he went again to India as governor of Fort St. David, and reduced the dangerous pirate Angria. When the Nabob Sujah-u-Dowlah attacked the British, and barbarously threw part of his prisoners into the memorable 'Black Hole' of Calcutta, Colonel Clive sailed at once to Calcutta, took Fort William in January 1757, and, following up his advantages, thoroughly defeated and disorganised the Sujah's army. Clive's victories led to a peace, which, after a period of intrigues and quarrels, was followed by another war, and this was ended by the great victory of Plassey. On the next day he entered Moorshedabad in triumph, and installed Meer Jaffier, who took the style of Jaffier-Ali-Cawn, in the place of Sujah-u-Dowlah. Clive, being made governor of Calcutta, held the chief command there, and through the rest of British Bengal, for about two years.

In 1759 he destroyed a formidable Dutch armament sent against Bengal. In 1760 he returned to England, where he received the unanimous thanks of the Company, and was created by government an Irish Peer, under the title of Lord Clive, Baron of Plassey. He was returned to parliament for Shrewsbury, and kept his seat in the House of Commons till his death. In politics he was rather liberal, being what was then called a 'moderate Whig.'

The affairs of India having fallen into confusion during his absence, he returned thither on July 14, 1767, with a constitution thoroughly shattered. He was received with the greatest distinction. Five years later (in 1772) his proceedings in India were made the subject of severe animadversion in parliament, and out of doors; and in 1773 a select committee of the House of Commons was appointed to examine into them. He was acquitted, but the course of the trial was a process of torture to his proud spirit; nor was the form of the acquittal altogether satisfactory. He never held up his head again, and towards the end of the following year he committed suicide. His death took place on November 22, 1774.

(*Life of Robert, Lord Clive, collected from the Family Papers, &c.*, by Major-General Sir John Malcolm, 3 vols. 8vo., 1836.)

CLIVI'NA, a genus of coleopterous insects of the family *Scaritidæ* and section *Geodephaga*. These insects are of small size, and live under stones in damp situations, particularly on the margins of rivers, lakes, &c.: their dentated anterior tibiæ enable them to burrow like the Lamellicorn beetles. Of the genus *Clivina* but few species are known: two are British, *C. fossor* and *C. collaris*. An allied genus, *Dyschirius*, is incorporated by Dejean with *Clivina*, but without sufficient reason.

CLOA'CÆ, large arched drains, formed under the streets of some ancient Roman cities. The most remarkable were the cloacæ of Rome, large portions of which still remain. These cloacæ are doubtless of high antiquity. (Livy, i. 38, v. 55.)

The cloacæ of Rome consisted of several branches, which ran in the low parts between the hills; these branches fell into one very large arched drain, constructed of solid blocks of stone, called the Cloaca Maxima. A portion of this cloaca is visible near the Arch of Janus. The arched drain of the Cloaca Maxima is fifteen feet wide, and thirty high (these dimensions include the masonry), with three arches in contact one within another: in some parts there are raised paths along the sides of the cloaca; and in the walls are stone brackets to support the ends of the waste pipes of the fountains. The only cloacæ or drains for a city, which can be compared with the cloacæ of Rome, are the sewers of London.

The maintenance of the Roman cloacæ was originally the business of the censors, but afterwards belonged to the ædiles. Agrippa, during the ædileship, made numerous large cloacæ. The city of Pompeii had cloacæ on a smaller scale.

CLOCK. [HOROLOGY.]

CLODIUS, PULCHER PU'BLIUS, a Roman patrician, began his public career by serving under his brother-in-law, L. Lucullus, in Asia, A.D. 70. In B.C. 65, he impeached L. Catilina for mal-administration in his government of Africa. He gained an unenviable notoriety in B.C. 62 by introducing himself, in the disguise of a woman, into Cæsar's house during the celebration of the sacred rites of the Bona Dea. [CÆSAR.] Cicero, who was called to give evidence on this trial, disproved the attempt of Clodius to show that he was not in Rome at the time of the offence which was imputed to him. To revenge himself, Clodius

took measures to qualify himself for the office of tribune of the people. With this view he got himself adopted into a plebeian family, though not without the help of Cæsar and Pompeius. No sooner was he elected tribune than he applied all his energies to effect the ruin of Cicero. [CICERO.]

In B.C. 57, when Lentulus had brought before the senate a proposal to recall Cicero from banishment, a day was fixed for taking the vote of the people. Fabricius, one of the tribunes, who favoured Cicero, endeavoured to possess the place of assembly with armed men, but it had been preoccupied by Clodius. An encounter followed, in which Clodius was victorious, and massacred a number of persons. Milo undertook to prosecute him for these outrages, but it was useless to proceed thus against a man who employed gladiators in his defence. Milo provided himself in a similar way, and the two parties had frequent engagements in the streets of Rome. Clodius made a vehement speech against the restitution of Cicero's property [CICERO] after his return; but the point being decided in Cicero's favour enraged Clodius beyond all bounds, and he made an attempt on Cicero's life. He contrived to screen himself from another trial, which he apprehended, by getting himself elected ædile; and no sooner was Milo's tribuneship expired, than he commenced a prosecution against him for acts of violence. Cicero appeared in defence of Milo, who was acquitted. In B.C. 52 Clodius was a candidate for the prætorship. Shortly after, Milo, on his way from Rome to Lanuvium, a distance of about fifteen miles, met Clodius returning from his country seat at Aricia. The meeting appears to have been accidental; but a fray ensued, in which Clodius received a wound. He was carried by his people into an inn at Bovillæ; but Milo's men dragged him out and killed him in the high road. Milo was tried for the murder, and Cicero spoke, though ineffectually, in his defence. [CICERO.] Milo withdrew before his condemnation, and retired into exile at Massilia (Marseille).

(Cicero, *Pro Milone;* Plutarch, *Life of Cicero.*)

CLOGHER. [BISHOPRIC; TYRONE.]

CLOGHNAKILTY. [CORK.]

CLOISTER, from the Anglo-Saxon *clauster*, or *cluster*, adopted from the Latin *claustrum*, a place inclosed or shut up. The term is more particularly applied to the covered walk or inclosure which was the usual appendage of our ancient monasteries, where the religious met to converse and take exercise. In a more general sense, cloister is used for a monastery at large, whether of monks or nuns, the inmates being inclosed or shut up from the world. The German word 'Kloster' retains this original signification.

CLONFERT. [BISHOPRIC; GALWAY.]

CLONMEL, a market town and parliamentary borough in Ireland, chiefly in Tipperary, but partly in Waterford, is situated on both sides of the river Suir, and on Moore Island and Long Island, which are connected with the main land by three bridges. It is 104 miles S.W. from Dublin. The population, in 1841, was 13,505. Clonmel returns one member to the House of Commons.

Clonmel is the assize town for the south riding of the county of Tipperary. It contains a large court-house; a gaol; barracks; a district lunatic asylum; a union workhouse; a fever hospital; a dispensary; a parish church; 3 Roman Catholic chapels; and places of worship for Presbyterians, Methodists, and other dissenters. There is a large and well-endowed grammar-school, besides numerous other schools. The principal street is wide and more than a mile long. The other streets are generally regularly built, and there are, as compared with most Irish towns, few narrow lanes. The town is ancient, and was formerly walled. One of the four gates remains, and has been repaired within these few years.

Clonmel is at the head of the Suir navigation, and there are generally about 120 lighters, of from 40 to 50 tons' burden, employed in conveying goods between Clonmel and Waterford. Grain, provisions, and butter are exported. The town is also the centre of a system of conveyance of travellers on light cars, established by Mr. Bianconi, which extends over a great part of Leinster, Munster, and Connaught.

(Fraser's *Handbook for Ireland;* Thom's *Irish Almanac.*)

CLOTHAIRE I. II. [FRANCE.]

CLOTILDE, MARGUERITE ELEONORE, born at Vallon Chalis, in the Vivarais, about 1405, married Bérenger de Surville. During his absence in the wars under Charles VII., in which he was killed, Clotilde is said to have composed and addressed to him her first epistle, which she called 'Héroide,' in imitation of Ovid's compositions of the same name. She afterwards, during her long widowhood, is said to have composed the other poems which bear her name. They consist chiefly of ballads, rondeaux, chansons, epistles, with fragments of an epic poem. But the authenticity of these compositions is very much doubted. They were first published by Vanderbourg in 1803, with a biography of Clotilde. The poems are not without merit; and, if not written by Clotilde, they are a clever imitation of the old French style of the 15th century. Clotilde is said to have died at a very advanced age.

CLOTTED CREAM. [BUTTER.]

CLOUD, a mass of vapour or other substance not a necessary constituent of the atmosphere, elevated to a considerable height in it. When very near the surface of the earth, it takes the name of mist.

In its permanent state, a cloud is conjectured to be a mass of *vesicular vapour*, that is to say, a collection of minute watery globules filled with air. Such globules being specifically heavier than the surrounding air, the cause of their being suspended in the atmosphere has been ascribed to ascending currents of heated air, or to an excess of temperature derived from the heat of the sun or of the earth; but it is admitted that our data are too few to render any attempt at explanation advisable, and that we can only form conjectures more or less probable concerning the form, the extent, the elevation, &c. of these masses.

The motion of the clouds, though frequently depending on that of the wind, is nevertheless

often caused by the action of one mass upon another, which there is every reason to attribute to their electrical states.

The height of the clouds varies to upwards of a mile, being much more frequently less than more; small fleecy patches of cloud are frequently however from three to five miles in height, and the average height varies at different periods of the year. Mr. Crosthwaite of Keswick, by fixing marks at known heights on the sides of Skiddaw, was enabled to determine the elevations of clouds when those elevations did not exceed the height of the mountain, which is 1050 yards; and in Dr. Dalton's 'Meteorological Essays' (1793) there is given a table showing, from these observations, the number of times in each month of the year when the heights of the clouds were between 0 and 100 yards, between 100 and 200 yards, &c.; also the number of times in which the clouds were above the mountain. Though in heavy and continued rains the clouds were mostly below the summit, yet it frequently rained when they were above it.

The most complete classification of clouds, and sketch of their usual forms and arrangements, is to be found in a paper by Mr. Luke Howard, first published in Tilloch's Magazine. In this paper Mr. Howard first proposed the nomenclature which is now so frequently used, and of which we give the heads in his own words.

1. *Cirrus.* A cloud resembling a lock of hair, or a feather. Parallel, flexuous, or diverging fibres, unlimited in the direction of their increase.

2. *Cumulus.* A cloud which increases from above in dense, convex, or conical heaps.

3. *Stratus.* An extended continuous level sheet of cloud, increasing from beneath.

4. *Cirro-cumulus.* A connected system of small roundish clouds, placed in close order or contact.

5. *Cirro-stratus.* A horizontal or slightly inclined sheet, attenuated at its circumference, concave downward, or undulated. Groups or patches having these characters.

6. *Cumulo-stratus.* A cloud in which the structure of the cumulus is mixed with that of the cirro-stratus or cirro-cumulus. The cumulus flattened at top, and overhanging its base.

7. *Nimbus.* A dense cloud spreading out into a crown of cirrus, and passing beneath into a shower.

Conjectures relating to the weather, from observations of the states of the clouds, are in the highest degree uncertain. That many persons acquire a power of prediction which is frequently correct cannot be denied; but, if we except the general fact that the collection of clouds promises rain, and dispersion fair weather, there are no rules in which even continual observers are agreed.

CLOUD, ST., a small town of 3420 inhabitants, in the department of Seine-et-Oise, 7 miles W. from Paris, stands on the slope of a hill on the left bank of the Seine, which is here crossed by a handsome stone bridge. The town owes its foundation to Clodoald, grandson of Clovis, who built a monastery here in A.D. 551.

The claims of this place to notice are founded upon its palace and park. The palace was built by the Duke of Orleans, brother of Louis XIV., who employed upon it several eminent architects, among whom was Mansard. It was purchased a little before the Revolution by Marie Antoinette, who enlarged it, and rendered it more magnificent. Bonaparte, on his return from Egypt, assembled the Council of Five Hundred in the Palace of St.-Cloud, and, having dissolved them by force, was here first saluted with the title of First Consul. Under the Empire and the Restoration the palace was always a favourite summer residence of the respective courts. The memorable ordonnances which caused the revolution of July 1830 were dated from St. Cloud. The palace was also a summer residence of the Ex-king Louis Philippe.

The park extends from Sèvres to the town of St.-Cloud, on a hill which rises above the bank of the Seine. It is divided into the great and little parks. The former contains several magnificent avenues, in one of which the fair of St.-Cloud is held; in it also are splendid water-works, whereby the liquid crystal is made to assume a wonderful variety of graceful forms. The little park surrounds the palace, and extends to the top of the hill; it is laid out in gardens, diversified with ponds and statues, and here and there adorned with plantations presenting magnificent masses of foliage. On the top of the hill stands a lofty tower surmounted by a copy of the monument of Lysicrates. From this spot there is a fine view over Paris and the valley of the Seine. During the fair of St.-Cloud, which commences on the 7th of September and lasts a fortnight, the waterworks play, the palace is open to the public, and in the evening the park and the great avenue are illuminated.

CLOUDBERRY, a dwarf kind of bramble, with orange-yellow fruit found in turfy Alpine bogs; it is the *Rubus chamæmorus* of botanists. Its fruit is excellently well flavoured when newly gathered.

CLOVE PINK, a species of Dianthus, so called from a supposed resemblance in odour between its flowers and the cloves of the shops.

CLOVER, a name given to different species of Trifolium. Dutch Clover is *Trifolium repens;* Purple Clover is *T. pratense;* Cow-Grass, or perennial clover, is *T. medium.*

Clover was introduced into the agriculture of Great Britain about the 16th century, from the Low Countries, where it had been long cultivated as green food for cattle in situations where natural pastures were scarce. The species of clover are annual, biennial, or perennial plants. The annual clovers, with the exception of the *Trifolium incarnatum* (*Trèfle incarnat* or *farouche*), introduced from the south of France, are not so generally cultivated as the biennial, which produce a greater crop, and, being sown along with the spring corn, come up the first year under its shade, and give a full crop in the second. In good land they will sometimes stand another year, but they fall off in quantity; and unless other artificial grasses or perennial clovers have been sown amongst them, to fill up the places where the biennial clover has failed, it is seldom profitable to allow them to remain on the ground more than one year after that in which they are sown. The most approved

variety of the biennial clovers is the common red or broad clover (*Trifolium pratense*), which is usually sown with barley or oats, or sometimes among wheat or rye in spring. There is however some risk of the clover not coming up so well, if the wheat or rye is very close on the ground. In Scotland clover is often sown among wheat, in Norfolk invariably with barley, and in Belgium among rye. This depends on the various rotations adopted in different countries. The first crop is generally mown and made into hay. In this process great care is taken not to break off the tender leaves of the plant in drying; the swarth is not shaken out as is done with meadow grass, but merely turned over; and, if the clover can be dried and put in a stack without any shaking, it is so much the more valuable. When clover is soaked with rain, no hope of an improvement in the stack must induce the farmer to carry it together, so long as the least moisture remains. If it is allowed to stay in the field till it is perfectly dry, even when it has been soaked repeatedly and is nearly black, and is then trod hard in a rick with a sprinkling of salt over each layer, it will be readily eaten by cattle in winter, and be far more nutritious than that which, having been stacked in a moist state, will infallibly come out musty.

It is usual to sow rye-grass (*Lolium perenne*) in a small proportion with clover seed, especially where clover, having been often repeated on the same land, is apt to fail. It is a good practice; and, although in the neighbourhood of London the unmixed clover obtains a better price, there is no reason why it should be preferred, unless the rye-grass has been allowed to stand too long, and has grown hard. Young rye-grass is a good corrective of the heating qualities of clover-hay. A very extensive use of clover-hay in London is to cut it into chaff, and to mix this with oats and beans for dray horses, which have little or no hay given them in any other way; but the most profitable use of clover is to cut it green for horses and cattle.

The white or Dutch clover (*Trifolium repens*) is a perennial, which grows rapidly and forms excellent pasture; but its bulk is not sufficient to make it profitable to mow it for hay. It is excellent for sheep, which thrive well upon it. A light calcareous soil is best adapted for white clover.

Another perennial clover, called Cow-Grass (*Trifolium medium*), is found in all rich meadows; it is often sown in conjunction with the white clover in laying down arable land to grass. The lesser yellow trefoil (*Trifolium minus*) and the hop trefoil (*Trifolium procumbens*) are also valuable varieties found in good pastures.

The only annual clover which is cultivated is the French clover (*Trifolium incarnatum*), mentioned before. It is a most valuable addition to the plants usually sown for fodder, from the short time in which it arrives at perfection if sown in spring; so that, where clover has failed, this may be sown to fill up the bare places. Its principal use is to raise very early food for ewes and lambs, which it does with very little trouble or expense. The Italian rye-grass (*Lolium perenne Italicum*) may be sown with it, and will grow as rapidly. After the Trifolium has been cut, this will continue and give an excellent second crop. It is advisable to have fresh seeds from southern climates from time to time, or it will probably become later every year by assimilation to the climate. English seed of the first year after importation seems the best, being heavier and more free from weeds than the foreign.

On good land, an acre of clover will produce as much as three tons and a half of dry hay; that is, two tons the first cutting, and one and a half the second. Greater crops are obtained on very highly manured land. When the seed is not intended for the market, the trouble of clearing it of the husk may be saved, especially in the *Trifolium incarnatum*. It will grow as well when sown with the husk as when cleaned; and it is easy to find the proportion required to be sown in that state by allowing for the weight of the husk.

CLOVES, the dried flower-buds of *Caryophyllus aromaticus*.

CLOVIS, CLODOVEUS, and CHLODWIG in old German, from whence Ludwig, the Latinised form Ludovicus, and Louis are derived. [FRANCE.]

CLOWES, WILLIAM, Printer, was born at Chichester, January 1, 1779; died January 26, 1847. The father of Mr. Clowes was educated at Oxford, and kept a large school at Chichester; but he died when the subject of this notice was an infant, leaving his widow to support two children with straitened means. She was enabled, by keeping a small school, to give her son a business education; and he was apprenticed to Mr. Seagrave, a printer at Chichester. He came to London in 1802, and worked as a compositor with Mr. Teape, of Tower Hill. In 1803 he commenced business on his own account in Villiers Street, Strand, on a capital of 350*l*. He purchased one press; engaged one assistant; and, after working as a compositor through the day, would often, for two or three consecutive nights, toil at press, to have his small stock of type free for the next day's demand. It was this energy of character that raised Mr. Clowes to his subsequent eminence. Fortune favoured his exertions. He married, when he was of the age of twenty-four, a cousin of Mr. Winchester, a stationer, who had much government business; and by him he was recommended for important official work. His punctual industry and obliging and kindly disposition brought friends around him; and in a few years the humble beginner with one press had a considerable printing-office in Northumberland Court. This office was burnt down; but a larger rose in its place. In 1823 he commenced steam-printing. He had two or three machines in a dark cellar; and, the process being novel, his office had many visitors of literary reputation. Mr. Clowes was always a signal example of the honest ardour of manufacturing enterprise to lead the way under new circumstances. He saw that newspapers were printed by steam; and he estimated the possibility that books might be demanded in sufficiently large numbers to make the

new invention of more universal application than was at first considered probable. An action brought by the Duke of Northumberland, whose palace was close to Mr. Clowes's printing-office, to abate the steam-press as a nuisance, was successfully defended; but the printer removed his noise and his dirt, under the award of arbitrators; and the decision was a fortunate one for him. In 1826 he became the occupier of the spacious and well-known premises in Duke Street, Stamford Street. In the course of years the humble establishment of the young Sussex compositor grew into 24 steam-presses and 28 hand-presses, giving employ to 600 persons, in the largest, most complete, and well-organised printing manufactory that had ever existed in the world. The creation of a literature that should at once reconcile the apparently dissimilar qualities of goodness and cheapness, through a demand for books before unprecedented, gave a considerable impulse to the energies of Mr. Clowes. 'The Penny Magazine' and 'The Penny Cyclopædia' issued with undeviating regularity for fourteen years from his printing-office. Mr. Clowes was not a common man. His powers of arrangement were most acute; he was at once bold and prudent. He was one of those few men who would not recognise the word 'impossible' as one to be lightly employed. He who in 1803 had a few hundred weight of type to be worked from day to day like a banker's gold, would not hesitate, in the height of his prosperous career, to have tons of type locked up for months in some ponderous blue-book. To print an Official Report of a hundred folio pages in a day or night, or of a thousand pages in a week, was no uncommon occurrence. Mr. Clowes's name will not be associated with the honours of the great classical printers; his was another ambition. He lived in an age when knowledge was to become the inheritance of the many; and he furnished the means of carrying out this literary revolution in a more efficient manner than any of his professional competitors. His name will be permanently associated with the intellectual development of our time.

CLOYNE. [Bishopric; Cork.]

CLUB, is defined by Johnson to be 'an assembly of good fellows, meeting under certain conditions;' but, by Todd, an 'association of persons subjected to particular rules:'

It might not be quite safe to make a positive assertion as to the antiquity either of the name or the thing in England. But the earliest clubs remembered in our popular literature date about the end of the 16th or the beginning of the 17th century. It was then that there was established the famous club at the Mermaid Tavern in Friday Street, of which Shakspeare, Beaumont, Fletcher, Raleigh, Selden, Donne, &c., were members. Soon after, Ben Jonson founded another club, which met at the Devil Tavern in Fleet Street. Clubs have ever since continued, and many have been celebrated from the eminent men who have been members of them. Some have been political, some literary, and some merely social. There are, besides, the institutions known as Benefit Clubs.

The modern subscription houses in London which go by the name of clubs, such as the Athenæum, the University, the Senior and Junior United Service, and others of the same description, are in no other respect clubs, according to the ancient English understanding of the term, except that every member must be balloted for, or admitted by the consent of the rest. Political associations, in imitation of those existing in England, were formed at Paris in the earliest stage of the French Revolution, and assumed the English name of clubs. The Breton Club, the Jacobin Club, the Club des Feuillans, and others, performed an important part in the various scenes of that extraordinary drama. They have been revived in the revolution of 1848.

CLUB-HOUSE. The club-houses of London constitute a new class of public buildings, which have the character of *palazzi*, palatial structures, plainly distinguishable from public buildings for business or amusement. While too they eclipse in external appearance almost every town mansion of our nobility, they are upon a far more spacious scale internally, because, except for the domestic part of the establishment, no other apartments are required than what in a private mansion would be called the state and reception rooms; there are in fact no bed-chamber floors. The rooms are besides more spacious and lofty than in private town houses of the very first class. Such are the Athenæum, the Carlton, the Reform, the Conservative, and several others.

CLUB-MOSS, or SNAKE-MOSS, is a prostrate moss-like plant, found in Alpine or damp situations in most parts of the world. All the species belong to the genus *Lycopodium*; that to which the name is most commonly applied is *L. clavatum*.

CLUB-ROOT. [Anbury.]

CLUNY. [Saône-et-Loire.]

CLUNY, ORDER OF MONKS OF, a branch of the Benedictines. William, Earl of Warren, son-in-law to William the Conqueror, brought these monks into England, and built their first house at Lewes, in Sussex, about A.D. 1077 or 1078. Tanner ('Notit. Monast.,' edit. Nasm., p. ix.) says there were twenty-seven priories and cells of this order in England. The number, of which an account is given in the new edition of Dugdale's 'Monasticon,' certainly amounts to forty-two, exclusive of three cells whose existence is not very distinctly known.

CLUPEI'DÆ, a family of fishes belonging to the section *Abdominal Malacopterygii*, of which the genus *Clupea* is the type. The other British genera are *Alosa* and *Engraulis*.

The genus Clupea comprehends the Pilchard (*C. pilchardus*, Bloch), the Herring (*C. harengus*, Linn.), Leach's Herring (*C. Leachii*, Yarrell in 'Zool. Journal,' vol. v. p. 277, and pl. 12), the Sprat (*C. sprattus*, Linn.), the Whitebait (*C. alba*, Yarrell in 'Zool. Journal,' vol. iv. p. 137 and 465, pl. 10).

The genus *Alosa* contains the Twaite Shad (*A. finta*, Cuv.), and the Allice Shad (*A. communis*, Cuv.).

The genus *Engraulis* contains the Anchovy (*E. encrasicolus*, Flem., *E. vulgaris*, Cuv.)

For an admirable description of these fishes, and interesting details connected with their habits and modes of capture, see Yarrell's *British Fishes*, vol. ii.

CLU'SIA, a genus of plants belonging to the natural order *Guttiferæ*. The species are trees and shrubs, usually parasitical, and yielding a viscid resinous juice, of a balsamic flavour; hence they are in England called Balsam-trees.

C. rosea, Rose-flowered Balsam-tree, is a native of the Carolinas and St. Domingo, and other parts of tropical America. The fruit is green, and of the size of an apple, with eight lines running like the meridians of a globe. When it ripens, it opens at these lines, disclosing its scarlet seeds lying in the midst of a pulpy mucilaginous matter, similar to the pomegranate. The whole tree is very handsome. Few fruits offer so beautiful a piece of mechanism. 'It grows on rocks, and frequently on the trunks and limbs of trees, occasioned by birds scattering or voiding the seeds, which, being glutinous like those of the misletoe, take root in the same manner; but the roots, not finding sufficient nutriment, spread on the surface of the tree till they find a decayed hole or other lodgment wherein is some small portion of soil: the fertility of this being exhausted, a root is discharged out of the hole till it reaches the ground, where it fixes itself, and the stem becomes a large tree.' (Loudon's 'Encyclopædia of Plants.')

C. alba, an elegant tree, is a native of South America, and epiphytical on larger trees. It abounds in a balsamic juice of a green colour, which becomes brown on being exposed to the air. The fruit is scarlet, and contains its seeds embedded in a scarlet pulp. Birds are very fond of the seeds, and pluck them out of the fruit while hanging on the tree.

C. quapoya is a climbing shrub with yellow flowers, and when cut into yields a white transparent juice.

CLU'SIUS, CA'ROLUS, or L'E'CLUSE, CHARLES, was born at Antwerp, Feb. 18, 1526. He commenced his education at Ghent, and from thence was removed to Louvain with the object of studying the law. He studied here for about two years, and then went to Marburg, where he became disgusted with the law, and pursued the study of philosophy. During this period he acquired a love for the study of plants, and devoted much of his leisure to this pursuit. In 1549 he left Marburg for the purpose of studying at Wittenburg. From Wittenburg he proceeded to Strassburg, and from thence to Montpellier. At Montpellier he became the pupil of Rondelet, and devoted himself to the study of medicine, and took his degree of doctor of medicine. He resided for three years at Montpellier, and then proceeded to Paris, where he remained for two years, but was compelled to leave on account of a civil war which broke out at that period. From this time he visited most of the countries of Europe for the purpose of adding to his botanical knowledge. He returned to Antwerp in 1573. Here he occupied himself with publishing the result of his botanical labours. He was invited by the Emperor Maximilian II. to become curator of the botanical garden at Vienna. This office he accepted, and he remained there till 1587, when, through the influence of court intrigue, he was obliged to retire. He then lived at Frankfort-on-the-Main in a state of perfect obscurity, till in 1593, in the 68th year of his age, he was called to the chair of botany at Leyden. This position he held for sixteen years, and died April 4, 1609.

Few men have suffered more in following a favourite pursuit than Clusius. He has on this account been called 'The Martyr of Botany.' During his botanical rambles he broke his thigh, and dislocated his ancle and his hip. Added to these misfortunes, he had a dropsical disease, and many other distressing complaints, so that his life was one of almost continued suffering, yet he continued teaching and writing to the very last, and translated many valuable works from the Latin into the French, Spanish, and Portuguese.

CLUSONE. [BERGAMO.]

CLUTHALITE occurs in large nodules in amygdaloid, constituting a congeries of imperfect crystals with rough surfaces. Colour, flesh-red. Hardness, 3.5. Brittle. Opaque or translucent on the edges only. Specific gravity, 2.166. Found in the Kilpatrick Hills, near Dumbarton. Silica, 51.266; alumina, 23.560; peroxide of iron, 7.306; soda, 5.130; magnesia, 1.233; water, 10.553.

CLUVE'RIUS (CLUWER), PHILIP, was born at Danzig, in 1580. His chief works are his 'Germania Antiqua,' folio, Leyden, 1616, which is a work of considerable research; and his 'Siciliæ Antiquæ Libri Duo,' to which he added a short description of Sardinia and Corsica, folio, 1619. His 'Italia Antiqua,' which was published after his death, is a work of great research, and is still one of the best on the geography of ancient Italy, although it now requires considerable correction. Cluverius died at Leyden in 1623.

CLWYD. [DENBIGHSHIRE.]

CLYDE, a river in Scotland, the third in magnitude, but the most important for its navigation. Its sources lie between 55° 18′ and 55° 28′ N. lat., among a group of mountains. It receives the streams of the Daer, the Douglas Water, and other small rivers, and flows into the Frith of Clyde, between Arran and Ayrshire, after a course of about 100 miles. Near Lanark it descends about 230 feet in 6 miles, forming the beautiful and romantic Falls of Clyde—Bonniton-Linn, Corra Linn, and Stonebyres' Linn.

Below Glasgow the Clyde has been made the scene of astonishing engineering works. About 80 years ago, only vessels of 3½ feet draught could come up to Glasgow Bridge; in 1775 the whole river from Glasgow to Dumbarton was deepened so as to receive vessels of 6 feet draught; this depth was increased by 1831 to 13½ feet; by 1847 to 15 feet; and works now (1848) in progress will carry the depth to 20 feet at neap tides. The river for 12 miles is being widened, straightened, and deepened.

The Clydesdale and Caledonian Railways will, when finished, run for a considerable distance on both sides of the Clyde.

CLYME'NIA, a group of fossil Cephalopoda, thus named by Count Münster, who has described

a considerable number of species from some calcareous bands in the Palæozoic strata of the Fichtelgebirge. Some of these, with several others (in all seven), occur in the strata of Devon and Cornwall, and have been described by Professor Phillips. [GONIATITES.]

CLY'PEUS, the generic name given by Klein and Leske to a group of fossil Echinida, frequent in the oolitic formations. *Clypeus sinuatus* of Leske is the largest British species. *C. clunicularis* of Smith is now ranked as a *Nucleolites*.

CLY'PEUS SOBIESKI (the *Shield of Sobieski*), a constellation formed by Hevelius out of some small stars below Aquila, and passing the meridian about an hour before α Aquilæ. The name was given in honour of John Sobieski III., king of Poland.

CLYSTERS (the Greek κλυστήρ), lavements, or enémata, terms bestowed upon medicinal agents introduced into the rectum, or lower bowel, with the intention of expelling its contents, or producing other local effects, and also occasionally to influence the system generally.

Clysters are rarely, except in two instances, taken or administered without the order or superintendence of a competent medical attendant, and therefore we shall confine our observations chiefly to those two cases. The first and most common is where persons employ them for the relief of constipation; for this purpose tepid water or gruel is, by means of a proper instrument, thrown up into the rectum, and, when a suitable quantity (about a pint) is used, it is generally speedily returned, bringing with it the other contents of the lower bowel. To the occasional use of such means no objection can be urged; but if employed habitually, and as a substitute for the efforts of nature, the greatest injury will result. The second case to which we have alluded, in which clysters are employed without medical superintendence, is that of tobacco-smoke thrown into the rectum of drowned persons. A more hurtful measure cannot be adopted; it is now abandoned by all intelligent persons.

CLY'THRA, a genus of coleopterous insects of the family *Chrysomelidæ*. The species are very abundant, and reside on trees and shrubs. In England there are five species, which make their appearance at the beginning of summer. The known larvæ of these insects inhabit a coriaceous tube, which they drag about with them.

CLY'TUS, a genus of coleopterous insects, of the section *Longicornes* and family *Cerambyx*. These insects are generally of a moderate size, and have the elytra adorned with arcuated fasciæ. Their ground colour is usually black or brown, and the markings yellow. About ninety species of this genus have been discovered; and they appear to inhabit every quarter of the globe. Five are recorded as British, of which the most common are *C. mysticus*, *C. Arietis*, *C. arcuatus*.

CNEMI'DIUM, a genus of Spongiadæ, proposed by Goldfuss, for some fossils usually ranked as Mantellia and Siphonia.

CNIDUS was a city of Caria on the S.W. coast of Asia Minor, at the extremity of a peninsula between the Gulf of Cos and the Gulf of Syme, and facing the south part of the island of Cos, which is 10 miles west of Cape Crio, or Triopium, near which Cnidus stood. Cnidus was a Dorian colony. Cnidus contains numerous architectural remains, among which is a theatre 400 feet in diameter.

COACH. It is stated by Stow, that in '1564, Boonen, a Dutchman, became the queen's coachman, and was the first that brought the use of coaches into England.' Anderson ('History of Commerce'), on the other hand, says that 'about 1580 the use of coaches was introduced by the Earl of Arundel.' A long time elapsed before this luxury was attained by more than a few very rich and distinguished individuals, and a very much longer time before coaches became general. Coaches let for hire were first established in England in 1625. (Anderson.) They did not stand in the streets, but at the principal inns. In 1637 there were, in London and Westminster, 50 hackney-coaches. Stage-coaches were first used in England soon after the introduction of hired carriages. The first mail coach travelled from London to Edinburgh about 1785, and to Glasgow in 1788.

The use of stage-coaches rapidly extended itself; and from the latter part of the last century, until the establishment of railways, there was scarcely any small town through which some stage-coach did not pass, and no considerable road which was not travelled by many. In this country the best stage-coaches were very perfect machines, and the arrangements by which they were conducted, when the number of persons and animals that were engaged is considered, were extremely complete. The principal stage coaches ran with four horses, and the rate of travelling among the *fast* coaches was rapid. In 1833, the distance between London and Shrewsbury (154 miles), Exeter (171 miles), and Manchester (187 miles), was done in a day. The mail to Holyhead did the 261 miles in 27 hours, and that to Liverpool, 203 miles, in 21 hours. The coaches were on springs, and, though strong, were light and elegant. Every stage-coach or omnibus requires a license, for which three guineas is charged, and a duty of three halfpence per mile is levied on stage-coaches as well as on the omnibuses, which, for the conveyance of passengers in towns, and to and from the railroads in the country, now generally supply their place.

The omnibus, a sort of long-bodied coach, was introduced into London in 1831. By an act passed in 1833, coaches and omnibuses are allowed to ply for hire in the streets of London; and the drivers and conductors are required to take out a license, and to wear a badge having a number upon it.

The coaches which form the trains upon railroads are of very different construction from those used on common roads: they are stronger, larger, and heavier: they are fastened together with links of chain, and there is attached to the back and front of each a 'fender,' by which concussion is prevented when the train is stopped.

Upon the Continent, travelling in public carriages was never so rapid or so commodious as in England. In France the diligences were, and what still exist are, clumsy carriages, generally

consisting of three bodies, and are drawn by five or six horses, usually driven by one postilion from his saddle. The first body, called the 'coupé,' formed like a chatiot, contains three people; the second, which is like a coach, the 'intérieur,' holds six persons; the third, which is similar to a coach turned sidewise, carries six or eight passengers, and is called the 'rotonde.' In addition to these, there is on the roof, before the place appropriated to the luggage, the 'banquette,' a bench sometimes furnished with a hood for the accommodation of four passengers. But every where the use of the railroad is superseding the old stage-coach on all the great lines of road in all highly civilised countries.

COACH-MAKING. This term is a collective one for various branches of mechanical occupation. The timber, the iron, the leather, the brass and plated metals, the trimmings, and other materials of a coach, are wrought by wholly distinct bodies of operatives; and there are many minor divisions of each class. The 'body-makers' produce the vehicle or body itself, while the 'carriage-makers' are employed on the stouter and stronger timbers beneath and around the body. The chief kinds of wood employed are ash, beech, elm, oak, mahogany, cedar, pine, deal, fustic, birch, and larch—each kind appropriated to the purpose for which its fibrous nature best fits it. In working up these varieties of timber, tools and processes are employed similar to those in cabinet-making, together with others peculiar to coach-making. The various forms of the coach gig, dennet, curricle, tilbury, stanhope, &c., lead to the exercise of much ingenuity in fashioning the wood-work to the requisite curved forms. The axles on which the wheels work, the springs which protect the carriage from concussion, and the iron perch which is sometimes used instead of wood, are the work of the 'coach-smith,' one of the most highly paid classes of London workmen. The coating of the body of the coach with leather is a most difficult and delicate art; and the subsequent painting, trimming, and decorating, all rank among the highest kinds in their respective classes. Coach-axles have been made the subject of patents; and so indeed have many other improvements in the manufacture of parts of coaches. So far as regards workmanship and processes, carts and waggons bear almost the same relation to coaches that carpentry does to cabinet-making; similar in character, but coarser. [SPRING; WHEEL.]

COAGULATION, the solidification of a liquid produced without evaporation and without crystallisation.

COAL. Some chemists have separated the elements of coal into volatile matter, charcoal, and ashes; others into charcoal, bitumen, and earth; others into carbon, oxygen, and hydrogen—according to the method of analysis. The results are very contradictory; but it will serve to illustrate the difference between a rich blazing coal and a stony coal to state that Mushet found in 100 parts of parrot coal 56 parts of volatile or bituminous matter to 39 of charcoal; whereas in Kilkenny coal he found only 4 of volatile matter to 93 of charcoal.

A description of the principal coal deposits is given under COAL FIELDS; the commercial features of the British collieries are noticed under COAL TRADE; the probable formation of coal is treated under COAL PLANTS; while the mechanical processes of extraction are described under MINING, COAL.

COAL-FIELDS, a term used to designate those extensive carbonaceous deposits which are found in many parts of the world, but more especially in our own island. Coal is found in these fields in strata of various thickness, alternating with slate-clay and sandstone; the alternations being frequently and indefinitely repeated. The coal-beds, which are of various qualities, are principally distinguished by the proportion of bitumen in the coal. The coal-seams, together with their alternating strata, called the *coal-measures*, usually lie on beds of millstone grit and shale (hard coarse-grained sandstone and slate-clay), which sometimes exceed 120 fathoms in thickness. Under this series is the mountain or carboniferous limestone, an assemblage of calcareous strata, of variable thickness, sometimes exceeding 900 feet. The carboniferous limestone rests on a bed of old red sandstone, varying in thickness from 200 to 2000 feet. These four different series of strata are usually comprehended under the term 'coal-formation;' but at Coalbrook Dale and at Dudley the coal-measures are on lower or earlier strata.

The Coal-Field of Northumberland and Durham commences near the mouth of the river Coquet on the north, and extends nearly to the Tees on the south. As far as Shields the sea is its boundary on the east; from that point it leaves a margin of a few miles between it and the sea, and extends about ten miles west from Newcastle. Its greatest length is fifty-eight miles, and its greatest breadth about twenty-four. The beds of which this coal-formation is composed generally dip towards the east and crop out towards the west. In consequence of this disposition, the beds of coal in some places appear at the surface, while in the opposite direction they are at great depths. The beds of these coal-measures are about eighty in number, and consist of alternating beds of coal, sandstone, and slate-clay; making an aggregate thickness of 1620 feet, which varies however in different parts. One of the coal-seams, the High Main, is 6 feet thick; another, the Low Main, 6¼ feet; the Bensham is 4 feet; and the Coal Yard is 3 feet. The other seams diminish in thickness down to a few inches—too thin to be workable. The aggregate thickness of coal is supposed to be about 44 feet, of which about 8 feet are workable. This coal-field is traversed by numerous dykes or faults, called *troubles, slips, or hitches*. These occasion much embarrassment to the miner, on account of the interruption they give to the course of the coal.

The coal-field of Northumberland and Durham supplies an enormous quantity of coal. Besides being consumed in its own district, London depends nearly altogether on it, as well as most of the eastern and southern counties. Shields (for Newcastle), Stockton, Seaham, and Sunderland are the ports from which the coal is shipped: the

Tyne vessels, being the larger, are laden for the London market; those of the Wear, which are much smaller, sail to the small rivers and harbours along the coast, and carry coal as far west as Plymouth.

Besides this coal-field there is another coal-formation in the northern counties, called the Independent Coal-Formation. This tract terminates westward at Cross Fell, in Cumberland, is supposed to occupy the whole of Durham, and constitutes the whole of that part of Northumberland east of the Cheviots, exclusive of the coal-field already described. The different strata of this coal-formation amount to about 150. The coal-measures here differ from those we have just noticed, in having limestone as well as sandstone and slate-clay alternating with the beds of coal. The coal worked in this formation is slate-coal, and is considered inferior in quality to the Newcastle coal.

Detached Coal-Fields in the North of Yorkshire.—These are very limited in extent, being small insulated coal-basins, lying in hollows in the gritstone. They occur near Middleham, Leyburne, Thorpefell, near Burnsell, and as far west as Kettlewell. The seam is seldom more than twenty inches thick. Coal is wrought in some parts of the great carboniferous chain extending from Penigent to Kirkby Stephen. At Turna Fell, near Hawes, in Yorkshire, and at Tan Hill, near the highest part of the road from Brough to Argengarthdale, this coal is extensively worked, and is of good quality. The same seam is found near Kirkby Stephen, and at other spots.

Coal-Field of South Yorkshire, Nottingham, and Derbyshire.—This extensive field, which in character is closely allied to that of Newcastle, occupies an area extending north and south from a little to the north-east of Leeds nearly to Derby, a distance of more than sixty-five miles. Its greatest width, 23 miles, is on the north, reaching nearly as far as Halifax to the west. On the south it extends towards the east to Nottingham, and is here about 12 miles wide; but in some parts it is much narrower. The strata of these coal-measures range in the same manner as in the Northumberland coal-field, from north to south, dip to the east and rise to the west and north-west. The strata of this coal-formation are very numerous. The coal-seams are about 30 in number, varying from six inches to 11 feet in thickness. Since the opening of the Midland Railway, which traverses this coal-field, the working of the collieries has been vastly extended by the facilities for inland carriage. Three varieties of coal occur in these measures: hard, or stone, which burns to a white ash; soft, or bright, which burns to a white ash; caking, or crozling, which usually burns to a red ash. The first is esteemed the best, and is in much greater demand than the others.

Coal-Fields of North Stafford.—There are two detached coal-fields: the one situated on the N.E. of Newcastle-under-Lyme, distinguished as the Pottery Coal-Field; the other at Cheadle, to the east of the first. The first measures from 6 to 10 miles in every direction; the second, from 3 to 5 miles. Thirty-two beds of coal have been met with, from 3 to 10 feet thick, and at depths from 50 to 400 yards.

The Manchester or *South-Lancashire Coal-Field* commences in the north west of Derbyshire, and continues thence to the south-western part of Lancashire, forming an area somewhat in the shape of a crescent, having Manchester nearly in the centre. Viewing it as a whole, the strata rise towards the exterior edge of this crescent-shaped coal-field; but the disturbances by faults and dykes are very numerous. The coal from the Lancashire field supplies Manchester, Liverpool, and the surrounding district.

The North Lancashire Coal-Field is one of little importance. It lies midway between Lancaster and Ingleton; it is about eight miles long and six miles wide.

The Whitehaven Coal-Field is situated on the west coast of Cumberland, and extends from near Egremont, south of Whitehaven, to Allonby on the north. Some of the seams are very thick and of the finest quality; the shafts are very deep, and some of the mines are worked under the sea.

The Coal-Field of Ashby-de-la-Zouch is of a very irregular figure. The greatest length from north-west to south-east is about ten miles, the greatest breadth about eight miles; but the area is nearly severed into two distinct coal-fields. One of the seams reaches the thickness of 17 to 21 feet.

The Warwickshire Coal-Field commences near Coventry, and continues in a north-west direction to Polesworth and Wareston, about five miles east of Tamworth, a distance of sixteen miles: its average breadth is about three miles. All the strata rise to the E.N.E. The principal collieries are near the south of the field, at Griff and Bedworth. The depth of the first is 117 yards, and the principal seam three yards in thickness.

South Staffordshire or *Dudley Coal-Field* extends from Beverton, near Badgely, on the N.E., to near Stourbridge on the S.W. The greatest length is about twenty miles, and its greatest breadth, from Walsall to Wolverhampton, is about seven miles, but it is very irregular towards the south, being almost divided into two parts. Many coal-seams, of eight, six, and four feet in thickness, are worked in the northern portion of this field; but the southern portion is of much more importance, as it contains seams from 30 to 45 feet in thickness. This enormous thickness is however not one continuous seam, but a number of seams, divided by layers of what the miners call *band*, which are very thin beds of clay-slate. The working of these thick seams is not so profitable as might be supposed. The pillars left standing in order to support the high roof are estimated at about one-third of the whole coal in the bed, and the small coal left in the mine is about equal to another third, so that only one-third of the whole is at present taken out of the mine. This district supplies coal to the numerous iron-works in the immediate neighbourhood, and the manufactories of Birmingham and its vicinity; besides which, all the neighbouring counties, as far south as Reading and Gloucester, are supplied by means of inland navigation.

North Wales Coal-Fields.—A valley crosses the

Isle of Anglesea, parallel to the Menai Straits, and is flanked on both sides by parallel bands of carboniferous limestone. Coal of good quality exists here, and a few mines have been successfully opened. In Flintshire a coal-field exists, extending north and south from the Dee to Oswestry, about 30 miles: not continuously however, but in patches. It is supposed that the seams pass under the Dee, and join those of Lancashire. The seams vary from 2½ to 15 feet in thickness.

The Coalbrook Dale Coal-Field extends from Wombridge to Coal Port, on the Severn, a length of about six miles; its greatest breadth is about two miles. These coal-measures are composed of the usual alternating strata, and comprise nearly 90 alternations. The seams vary from a few inches to 5 feet in thickness; they occur at depths from 100 to 700 feet; and the coal varies much in quality at different depths.

On the west and south of this coal-field are several smaller isolated patches, more interesting to the geologist than to the miner.

The Coal-Field of South Wales is upwards of 100 miles in length, and the average breadth in the counties of Monmouth, Glamorgan, Caermarthen, and part of Brecon, is from 18 to 20 miles; it becomes much narrower in Pembrokeshire, being there only from 3 to 5 miles. This area extends from Pontypool on the east, to St. Bride's Bay on the west, and forms a vast basin of limestone, in which all the strata of coal and ironstone are deposited. The lowest bed is 700 fathoms deep at the centre, and all the principal strata lie from 500 fathoms deep to this depth. But this district is intersected by deep valleys, which generally run in a north and south direction, intersecting the coal. By driving levels in the hills, the beds of coal are found without the labour and expense of sinking shafts; there are also many pits in the low valleys. The seams vary from a few inches to 9 feet in thickness; and their aggregate thickness is about 100 feet. On the south side of the basin, the coal is principally of a bituminous nature; on the north-east it is a coking coal; on the north-west, stone coal. The occurrence of rich iron ore with or near the coal has led to the establishment of vast iron-works in South Wales.

South Gloucester and Somerset Coal-Field.—This basin occupies an irregular triangular space, bounded on the south by the Mendip Hills, and converging northward to the village of Fortworth in Gloucestershire. From Lansdown to the Mendips the continuity of the basin can be well ascertained, the coal-measures being uncovered in some of the valleys in which the principal collieries are situated. In other places shafts have been sunk through the overlying horizontal deposits, beneath which the coal is worked. The greatest length of this area is 25 miles; the width, from the collieries near Bath to those of Bedminster, near Bristol, on the west, is about 11 miles.

The total number of mines worked in this district is probably less than it was formerly; but the whole produce is certainly much greater, owing to improved methods in working. The seams of coal are very thin in comparison with those which are worked in the principal coal-fields of England, and in most of those would be rejected as not worth the working. The aggregate thickness of the seams worked in any single coal-pit scarcely exceeds one of the ordinary seams in the principal district.

The Forest of Dean Coal-Basin occupies an irregular elliptical area, circumscribed by the triangle formed by the Wye, the Severn, and the road from Gloucester to Ross; the largest diameter from N.N.E. to S.S.W. is about ten miles, the shorter about six. It contains about thirty beds of coal. A small coal-field lies a few miles north of it.

Scotch Coal-Fields.—Several small coal-fields occur in Dumfriesshire, forming narrow basins in the valleys of the great southern transition chain of Scotland. One in Nithsdale, and another in Canobie, are profitably worked.

The principal coal-district of Scotland occupies the tract which forms the great central lowland of Scotland, and lies between the great transition chain on the south, and the still loftier primitive mountains of the Highlands on the north. In the county of Haddington are three seams of good workable coal. There are a few mines in Fifeshire and Mid-Lothian.

In Lanark the coal-fields are numerous and extensive. The Wilsontown coal-basin and the Climpy basin both occur in the parish of Carnwath: they contain rich seams; and they form part of the great coal-basin of the Clyde, which extends on both sides of that river, and the centre of which is near Dalziel. On the same side of the river, in the parish of Monkland, there are many collieries, in which the thickest bed of coal is 9 feet, and is of good quality. On the left bank of the river coal is wrought in several places, such as Rutherglen, Cambuslang, Hamilton, Stonehouse, and Douglass. Throughout this district seven seams of coal are usually found within 415 feet of the surface; five of these seams are of sufficient thickness to be wrought, and of good quality.

This coal-basin of the Clyde extends into Renfrew, where there are many collieries. Coal is wrought in the parish of Eastwood, in that county, in several seams of various thickness; but none exceed 2 feet 6 inches. The whole are of good quality. Five of them are wrought in pits varying in depth from 10 to 40 fathoms. Coal occurs in different places in the counties of Dumbarton, Stirling, Linlithgow, Clackmannan, Perth, and Kinross.

Irish Coal-Fields.—Coal has been discovered in more or less quantity in seventeen counties of Ireland. The Leinster coal-district is situated in the counties of Kilkenny, Queen's County, and county of Carlow. It also extends a short distance into the county of Tipperary, as far as Killenaule. This is the principal carbonaceous coal-district. The Munster coal-district occupies a considerable portion of the counties of Limerick and Kerry, and a large part of the county of Cork. It is by much the most extensive in Ireland. Coal and culm have been raised for near a century

in the neighbourhood of Kanturk, in the county of Cork. At Dromagh colliery the work has been carried on to a very considerable extent; and the beds found in it are of four kinds, the *Coal-Bed*, the *Rock-Coal*, the *Bulk-Bed*, and *Bath's Bed*. The greatest depths of the Munster collieries is about 80 yards. The Connaught coal-district has been very little explored, although it is known to contain good bituminous coal. The Ulster coal-district commences near Dungannon, in the county of Tyrone, and extends in a northern direction to Coal Island, and in continuation to the neighbourhood of Cookstown. The principal collieries are at Coal Island and at Dungannon. The coal of this district is bituminous. There are a few minor coal-fields in other spots. The details given by Sir Robert Kane ('Industrial Resources of Ireland') show that nothing is wanted but capital and peaceful enterprise to develope a great coal-trade in Ireland.

Continental Europe.—In the centre and south of France some small coal-fields occur in the valleys of the Loire, the Allier, the Creuse, the Dordogne, the Aveyron, and the Ardèche, between ridges proceeding from the primitive central group connected with the Cevennes; and, in a few localities, some of the thickest beds of coal yet discovered have been found. In the north of France, the coal-formation occupies a very large tract of country, running westward from Hardinghen, near Boulogne, by Valenciennes, and thence up the Schelde and down the Meuse to Eschweiler, beyond Aix-la-Chapelle. [BELGIUM.] The district along the Meuse, between Namur and Liege, contains coal. The coal-districts in the north of Germany are probably the prolongation of the Belgian formation. In Saxony coal is found in many places along the northern foot of the Erzgebirge. It is extensively worked near Zwickau and near Dresden. There is a very extensive coal-district in Bohemia, extending into Upper Silesia. Good coal has been found in various parts of Russia, and also in two or three places in Swedon. Laborde mentions coal as occurring in Spain; in eight places in Catalonia, in three in Aragon, and in one in New Castile. Coal, it is conjectured, will be found in several parts of continental Greece. On the north of Constantinople coal is said to be found.

The Report of the engineer appointed by the administration of roads and bridges in France, 1845, states that that country is in the third rank as regards the production of coal. This engineer calculates the annual production of England at only 23,500,000 tons (which is far too little); of Belgium, 4,500,000 tons; of France, 3,783,000 tons; and of the Zollverein, 3,000,000 tons. France contains 425 coal-mines, on a surface of about 450,000 hectares; of these 173 are not worked. These mines employed, in 1844, nearly 30,000 labourers. The amount of coal raised being insufficient for the consumption of the kingdom, about 1,500,000 tons are imported from England and Belgium.

Asia.—In Asia coal has long been worked in China, but what has hitherto been obtained is said to be very slaty. Coal is likewise found in the countries immediately around the Persian Gulf, but of a very indifferent description. In most parts of Cutch, coal occurs in abundance, and of good quality; it ignites quickly, and burns to a white ash. Coals are also found in Bundelcund, Burdwan, Bhaugulpoor, Mirzipoor, and a few other places in India. Coal of good quality likewise occurs in the Birman Empire.

America.—In the United States of North America, east of the Appalachian range, there is an extensive coal-field in Virginia, 12 miles west of Richmond; it is about 10 miles wide, and has been traced near 40 miles. In the great secondary formation west of the Appalachians, a bed of coal is said to extend from the Ohio to the Tombigbee in Alabama. West of the Mississippi the argillaceous sandstone is associated with beds of coal and ironstone. The Ozarks contain beds of coal.

Nova Scotia contains a great quantity of coal. The great coal-field of Pictou has been traced from Carribboo Harbour to Merigomish, comprising an area of more than 100 square miles; and the seams vary from 1 foot to 50 feet in thickness. There is another coal-field, also of considerable extent, in the north-west part of the county of Northumberland, between the river Macan and the shores of the Chignecti Channel; and others in various parts of the colony. Coal of excellent quality is also got at Cape Breton.

In 1847 a very rich coal-field was discovered, or at least first opened, in Chili, between Santiago and Valparaiso. Roads are being made from thence to the Pacific, and the coal will be available for the Pacific steamers. English capital and English miners are engaged in it. It is said that coals can be delivered at 4*s.* per ton in districts which till lately paid 40*s.* to 50*s.* Recently a seam of excellent coal has been discovered in Vancouver's Island.

Coal has been found abundantly both in Australia and in Van Diemen's Land.

COAL-TRADE. The quantity of coals shipped coastwise from ports of Great Britain to other ports of Great Britain and to Ireland amounted, in the year 1845, to 8,723,468 tons; and the quantity exported to the British colonies and to foreign countries in the same year was 1,754,171 tons; making an aggregate of 10,477,639 tons of coals sea-borne from the maritime districts. The market of London alone required a supply of 3,463,630 tons, for the conveyance of which 11,987 ships (which make repeated voyages) were employed. The great towns of Lancashire, Yorkshire, Nottinghamshire, Derbyshire, Leicestershire, Warwickshire, and Staffordshire are supplied by canals or by land-carriage from collieries in the respective counties here enumerated. It has been estimated that the iron-works of Great Britain, most of which are situated in spots where coal is found, require every year, for smelting the ore and converting the raw material into bars, plates, &c., nearly seven millions of tons. There is good reason for believing that the annual consumption of coals within the United Kingdom is not far short of 35,000,000 tons. In 1841 the number of persons in Great Britain employed in coal-mines was

118,233. In Durham there were more persons employed under ground in coal-mines than in cultivating the surface. On the 10th of August, 1842, an act was passed 'to prohibit the employment of women and girls in mines and collieries, to regulate the employment of boys, and to make other provisions relating to persons working therein.'

It was long considered politic to check the exportation of coals to other countries, both through fear of exhausting the mines, and because it was imagined that our superiority as manufacturers might be endangered. A heavy export duty was accordingly levied; but this was gradually lessened in 1831, 1835, and 1842, and abolished altogether in 1845. There was formerly a revenue on coals carried coastwise, but this was abolished in 1831.

A very peculiar regulation was established by the coal-owners of the northern coal-field, called the 'limitation of the vend.' It was a systematic combination among the owners of collieries having their outlets by the Tyne, the Wear, and the Tees, to raise the price to consumers by a self-imposed restriction as to the quantity supplied. When the coal-duty was abandoned in 1845 the coal-owners gave up the 'limitation of the vend.'

A regulation which affects the coal-trade from the Tyne and the Wear has been established by act of parliament (6 Geo. IV. c. 32), under the provisions of which every ship must be loaded in her turn; and, if any colliery refuse to sell, a penalty is imposed of 100*l.*; but this regulation may be and has been evaded by the coal owners by an easily concocted pretext. Regulations have also been made as to the unloading of coal-vessels in the Thames; the number being guided by the price of coal in such a way as to keep up the monopoly.

In May 1844, the harbour-master of the port of London presented a return to the lord mayor, which shows the operation of the regulations established by the coal-owners in the port of London for keeping up the price of coal. On the 1st of May there were 260 vessels laden with coal, detained in sections waiting their 'turn' of sale. On one day in the same month, ten colliers had been detained, with their captains and crews, for forty-six days, and two had been detained above fifty days. On the 27th of May, 109 coal-laden ships were detained in sections, and the price of the best coal had advanced to 24*s.* and 25*s.* per ton, or about 34*s.* per ton to the consumer. It is believed that the best coal could be brought from Sunderland to London at 15*s.* a ton, and that 7*s.* per ton at the pit would be as remunerating to concerns working to their full power as 11*s.* with their powers limited by the vend regulations; and that a freight of 6*s.* per ton would be as profitable as the higher freight now paid, part of which is to cover the expense of detention.

The railways now in progress will have an important and most beneficial effect in reducing the price of coal in all districts lying far away from the collieries. The York and Berwick Railway, and the York and North Midland Railway, carry an immense quantity of coals.

Of the 8,723,468 tons of coal shipped at the several ports of the United Kingdom, to other parts of the United Kingdom, in 1845, the largest shipments were from

	Tons.
Newcastle	2,443,982
Stockton	1,542,542
Sunderland	1,536,654
Newport	485,402
Swansea	479,428

The ships and tons of coal to London were

Years.	Ships.	Tons.
1840	9,132	2,566,892
1841	10,311	2,909,144
1842	9,691	2,723,200
1843	9,593	2,628,520
1844	9,666	2,490,919
1845	11,987	3,463,630

Of this whole quantity in 1845, more than eleven-twelfths came from Durham and Northumberland.

The following table shows the principal foreign countries to which coal from the United Kingdom was exported in 1838 and in 1845, illustrating considerable fluctuations in an interval of 7 years.

	1838. Tons.	1845. Tons.
France	331,563	647,967
Holland	149,137	139,288
Germany	89,701	227,539
Prussia	60,401	184,487
Denmark	105,109	168,158
Russia	68,051	150,422
Spain	9,049	101,336
Italy	26,709	97,338
Turkey and Greece	33,224	61,043
United States of N. America	57,175	58,381
Foreign West Indies	7,097	22,154
Portugal	34,550	32,081
Sweden	23,690	34,664

The quantity of coal exported to British possessions in the six years from 1840 to 1845 was—

	Tons.
1840	298,591
1841	347,593
1842	352,054
1843	318,914
1844	326,703
1845	413,956

In 1845, the collieries of Northumberland and Durham were 129; the steam-engines employed were 19,204 horse-power; the actual production was 6,790,993 tons. In 1844 there were 16,515 persons employed at the Tyne collieries; 13,173 at those of the Wear; and 4211 at those of the Tees; making 33,898 in all. The largest number at any one colliery was 1403 at Lambton. The colliery proprietorships are ranged under four classes, according to the scale of the operations. The 1st class comprises four great concerns, headed respectively by the Marquis of Londonderry, the Earl of Durham, Lord Ravensworth, and the Hetton Coal Company. The capital sunk in each of these concerns is supposed to be not less than half a million sterling; they each comprise from

six to twelve separate mines, and all the necessary engines, waggons, horses, &c.; and they are believed to realise a profit on an average from 35,000*l.* to 45,000*l.* per year each.* The 2nd class comprises companies or partnerships whose sunk capital ranges from one to two hundred thousand pounds. The 3rd class includes those concerns which have only a single pit each, and whose capitals are from forty to sixty thousand pounds. The 4th class, humbler but more numerous than any of the others, comprises those which have a capital ranging from eight to thirty thousand pounds. In South Staffordshire, the 'Butty' system of employing miners is extensively acted on. This consists in the miners being the servants, not of the proprietor or lessee of a colliery, but of a contractor called a 'butty,' who engages with the proprietor of the mine to deliver the coal at so much the ton; hiring the labourers himself, using his own horses, and supplying all the tools necessary for working the mines. These butties have in general been working miners, who, by the accumulation of some little capital, or by the assistance of relations, are enabled to engage a pit, with or without partnership with other persons, and to enter into a bond to raise the coal at a given price per ton. But in the Northumberland and Durham district the relation between the proprietors and the miners is more direct and intimate. No middlemen or contractors are employed; the overseers, viewers, and other intermediate officers are paid by regular salaries; and the working colliers receive in cash from the proprietors, once a fortnight, the amount of their earnings.

The question respecting the available store of coal in this island has been lately much canvassed. Mr. T. Sopwith ('The National Importance of Preserving Mining Records,' 1844) remarks, 'The opinion that our stores of coal are all but inexhaustible rests wholly on assumed data, and not upon accurate and detailed statistical accounts, such as alone could warrant a confident opinion. This question will ere long become a subject of serious concern, unless some measures are taken to found our calculations on a solid basis.'

The export of coal from France has never reached 50,000 tons in one year. The importation has been constantly increasing, notwithstanding the great addition to the domestic supply.

In Belgium there are about 350 coal-mines. The Belgian coal is conveyed inland into France as far as Rouen, where it comes into competition with English coal. In 1834 the quantity of coal raised in Prussia was 1,810,000 tons; and in 1839 the quantity had increased to 2,442,632 tons. The coal from the Rhenish provinces comes down the Rhine into Holland, and it also enters into competition with English coal. In 1837 the produce of the coal-mines in the German Customs' Union (including Prussia) was 10,393,470 tons.

In the United States of North America, more than half the produce of coal is obtained from the mines of Pennsylvania. Nearly 7000 persons were employed in coal-mines in the United States in 1840.

COAL-PLANTS. That coal is the result of the mineralisation of vegetable remains is abundantly proved, both by the numerous impressions of plants found in connection with it, and by the traces of organisation which are still discoverable in it.

In general the impressions of plants occur chiefly in the shale of the coal-measures, that is, in the mud which separates the seams of coal, or in the sandstone or ironstone associated with the coal-formation; and, as such impressions are much more distinct than any that occur in the coal itself, it is chiefly from them that our ideas of the vegetation from which coal has been produced have been derived. They are often present in inconceivable beauty and abundance, as may be imagined from Professor Buckland's graphic account of those in the coal-mines of Bohemia. In his 'Bridgewater Treatise,' he says, 'The finest example I have ever witnessed is that of the coal-mines of Bohemia just mentioned. The most elaborate imitations of living foliage upon the painted ceilings of Italian palaces bear no comparison with the beauteous profusion of extinct vegetable forms with which the galleries of these instructive coal-mines are overhung. The roof is covered as with a canopy of gorgeous tapestry, enriched with festoons of most graceful foliage, flung in wild irregular profusion over every portion of its surface. The effect is heightened by the contrast of the coal-black colour of these vegetables with the light ground-work of the rock to which they are attached. The spectator feels himself transported, as if by enchantment, into the forests of another world; he beholds trees, of forms and characters now unknown upon the surface of the earth, presented to his senses almost in the beauty and vigour of their primeval life; their scaly stems and bending branches, with their delicate apparatus of foliage, are all spread forth before him, little impaired by the lapse of countless ages, and bearing faithful records of extinct systems of vegetation, which began and terminated in times of which these relics are the infallible historians.'

Coal-plants may be divided for practical purposes into three classes: 1, those of which only wood still containing organic structure has been found; 2, those which have an obvious analogy with recent plants; 3, those with which no existing analogy has been traced. We select a few of the most remarkable cases under each of these heads.

1. *Coal-Plants of which wood only containing organic structure has been found.*

The existence of wood in the coal-formation, with its texture still preserved, is a discovery of very modern date.

Coniferous wood is known among other things by the presence of small disks on the sides of its woody tubes. Differences in the arrangement of these disks have given rise to the formation of the genera *Peuce* and *Pinites*, to one or other of which all the coniferous coal-wood seems referrible. Mr. Nicol believes that it may all be referred to either the existing genera *Pinus* or *Araucaria*. Specimens of this kind of wood occur sometimes of

considerable size. A trunk of *Pinites Brandlingi* has been found 72 feet long, and another of *Pinites Withami* 36 feet long.

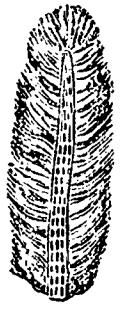
One specimen in ironstone also has occurred of the wood of the genus *Lepidodendron*. It consists principally of loose cellular tissue, having near the centre a zone of spiral vessels, connected with the bases of the leaves by arcs of spiral vessels, and having rudiments of wood on the outside of the zone. ('Fossil Flora,' 2. tt. 98 and 99.)

2. *Coal-Plants which have an obvious analogy with recent plants.*

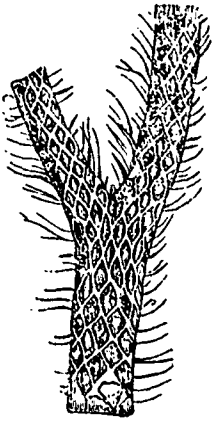
Coniferous plants have left few remains, except wood, by which they can be recognised. A cone of *Pinus anthracina* has been met with, and there is reason to believe that certain stems called *Bothrodendron*, having numerous minute dots upon their surface, and deep circular oblique concavities, four or five inches across, at intervals of ten or eleven inches, are also remains of trees of this description. It is probable moreover that some of the fossils referred to the genus *Lepidodendron* are really coniferous plants, especially *Lep. longifolium*; but upon this point nothing certain is known.

Palms occur occasionally, but in solitary fragments; they are among the rarest of well-identified coal-plants. Their trunks have not been discovered; their leaflets are mostly of a wedge-shaped figure, resembling those of Caryota or Wallichia: their fruit, to which the name of *Trigonocarpum* is given, are more frequent, and are always found in clusters, but separate from each other. These remains are generally oblong three-sided or six-sided bodies, not more than an inch long.

Lycopodiaceous plants, or what are considered analogous to them, form a very large proportion of the vegetable remains of the north of England coal-field. They are represented by impressions



Lepidostrobus variabilis.



Lepidodendron Sternbergii.

closely covered either with lozenge-shaped spaces disposed in a spiral manner, or by small scale-like leaves, which are supposed to have produced

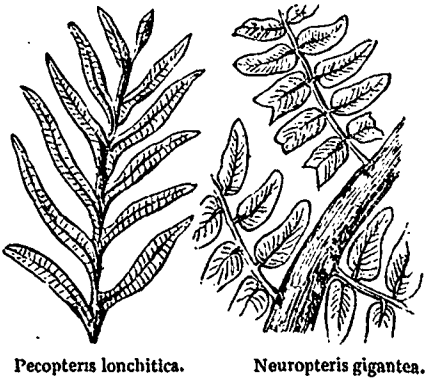
those spaces by falling off. When they branch, they have often been observed to do so in a forked or dichotomous manner. Sometimes they are minute, and no larger than existing Lycopodia; but they are occasionally found of considerable size, some having been seen which, although mere fragments, were between forty and fifty feet long, and more than four feet in diameter. An idea of their appearance will be gained from the accompanying figure of *Lepidodendron Sternbergii*.

Associated with them are narrow sharp-pointed leaves, resembling scales, which no doubt belonged to them, but which are distinguished by the name of *Lepidophyllum*. In the same formations are found cones of different sizes, consisting of small sharp-pointed lax scales, in the axils of which are seeds: these have been supposed to be the fructification of Lepidodendron; but, as there is no actual certainty of the fact, they bear the name of *Lepidostrobi*.

Lepidodendra are usually quoted as an instance of ancient species belonging to the same genus as modern Lycopodia. They however bear as close a resemblance to certain gigantic forms of plants as Araucaria, which belong to the family Conifera.

Ferns are the most abundant of all plants in the shale of the coal, almost every yard of it being more or less marked by their impressions, and very often containing them in great multitudes. It has been estimated that, of the vegetable remains belonging to the Coal Flora, one-half at least of the species are ferns. They are in most cases destitute of fructification, so that they cannot be arranged according to the system in use for recent species; and consequently M. Adolphe Brongniart, the great writer upon these subjects, has divided them into genera characterised chiefly by the way in which the veins are disposed. Some of the most common forms of these plants are as follows:—

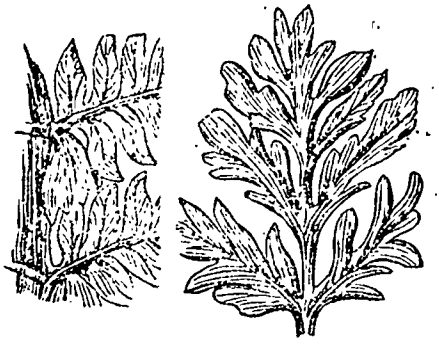
Pecopteris consists of species whose leaves are once, twice, or thrice pinnated, with the leaflets either adhering by the whole breadth of their base, or by the centre only. The midrib runs quite through to the point, and the veins are planted upon it somewhat perpendicularly.



Pecopteris lonchitica. Neuropteris gigantea.

Neuropteris has leaves divided like those of Pecopteris, but the midrib does not reach the apex of the leaflets; on the contrary, it divides off right and left into veins, and gradually disappears.

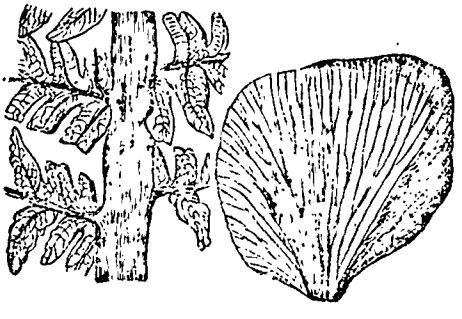
Odontopteris has leaves like the last, but its leaflets adhere to the stalk by their whole base; there is no midrib; and the veins spring side by side at once from the base of the leaflet, passing onwards towards the point.



Odontopteris Brardii. Sphenopteris artemisiæfolia.

Sphenopteris has twice or thrice pinnatifid leaves; the leaflets are narrowest at the base, and the veins generally arranged as if they radiated from the base; the leaflets are more frequently wedge-shaped than any other figure.

Lonchopteris has the leaves several times pinnatifid, and the leaflets more or less united to one another at the base; there is a distinct midrib, and the veins are reticulated.



Lonchopteris Bricii. Cyclopteris orbicularis.

Cyclopteris has the leaves simple, and either altogether undivided, or only lobed at the margin; they are more or less orbicular, and are filled with veins radiating from the base; there is no midrib. Specimens of this genus are common in ironstone nodules.

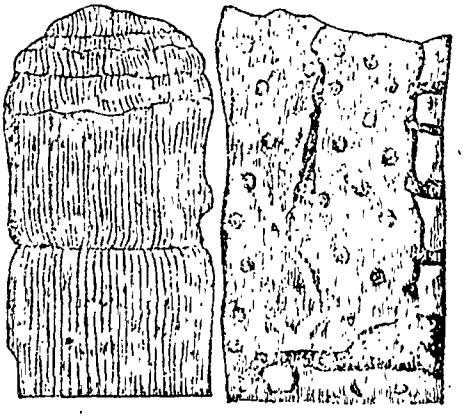
Schizopteris is like the last, except that the leaf is deeply divided into numerous unequal segments, which are usually lobed and taper-pointed.

Under the name of *Caulopteris* are comprehended all the kinds of stems of tree ferns. They are found in the form of short, round, or compressed truncheons, marked externally by oblong scars of considerable size, much wider than the spaces that separate them, and having their surface irregularly interrupted by projecting points.

3. *Coal-Plants with which no existing analogy has been satisfactorily traced.*

Calamites are fossils found in short, jointed, cylindrical, or compressed fragments, with channels furrowed in their sides, and sometimes partially surrounded by a bituminous coating, the remains of a cortical integument. They have been supposed to be related to the existing family of Equisetaceæ.

Later botanists adduce what they consider ample evidence to show the supposition that Calamites were analogous to Equiseta to be unfounded; and that they more probably were a race of plants which have now become extinct. It is particularly urged that the presence of bark in Calamites, the existence of which M. Adolphe Brongniart admits, is quite conclusive that those plants did not even belong to the same natural class.



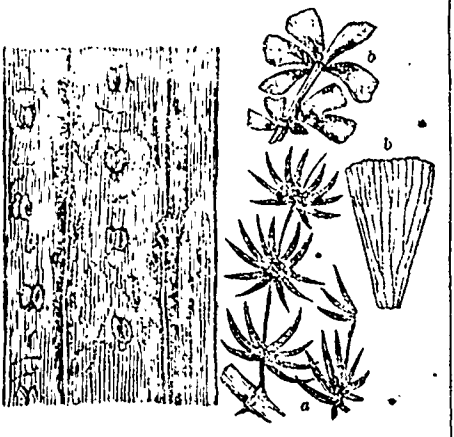
Calamites dubius. Stigmaria ficoides.

Stigmaria is one of the most common of all plants in the coal-formation. Not a mine is opened, nor a heap of shale thrown out, but there occur fragments of an irregularly compressed roundish form, apparently portions of a stem, marked externally with small cavities in the centre of slight tubercles arranged irregularly, but somewhat in a quincuncial manner. The axis of these fragments is often hollow, or different in texture from the surrounding part. From the tubercles arise long riband-shaped bodies said to have been traced to the length of 29 feet. There are portions of the extremity of the arms of a huge dome-shaped body which divides into twelve limbs, each of which spreads horizontally from the edge of the dome, usually dividing into two arms. It is useless to enumerate the conjectures which have been formed concerning the real nature of this strange production; all that can safely be asserted about it is, that it was unquestionably a vegetable, for even that might have been doubted in the absence of some of the evidence that now exists.

Sigillaria comprehends all those columnar gigantic stems which occur commonly in the sandstone of the coal in an erect or nearly an erect position, but which are prostrate and crushed flat in the coal-shale, and which are marked by flutings

with a single row of small scars between them. In diameter they vary from 6 to 36 inches, and they must have sometimes been full 40 or 50 feet high.

It is believed, from the very compressed state of many specimens, that these plants must have been of a soft nature, and, from the general absence of scars of large size, that they must have been very little branched. The presence of a distinct bark proves them to have been exogens of some kind.



Sigillaria reniformis.

a, Asterophyllites foliosa.
b, *b*, Sphenophyllum Schlotheimii.

Asterophyllites are very common plants, with narrow, pointed, whorled leaves, which vary in figure and in size, but which, together with the slenderness of the stem to which they belong, give the plants much the appearance of the modern genus Galium.

Sphenophyllum, with many of the characters of the last genus, has broad wedge-shaped leaves, the veins of which are forked. That circumstance has led to the notion that it was related to ferns, especially to the genus Marsilea.

Such are the more common of the plants whose remains are traced in the coal-measures. One of the first things which strikes us in casting the eye on the list is the little variety of form apparent in the old Flora. Instead of the infinite diversity of plants which are contained in a modern forest, nothing here presents itself except fir-trees, ferns, a very few palms, and a small number of species whose nature is unknown. Not a trace is found of grasses, or the numerous herbs and shrubs that are now met with in all regions clothed with vegetation; and of the vast class of exogens not one authentic instance occurs. Ferns, too, would seem to have constituted in themselves one-half of the entire Flora, and yet it is only in a few rare cases that they have been met with in a state of fructification. These circumstances have led to the inference that in the beginning nature was in reality but little diversified; that a few forms of organisation of the lower kind only were all that clothed the face of the earth; and that it was only in after ages that Nature assumed her many-coloured, ever-varying robe. And yet, at the same time, in those early days vegetation was more luxuriant and vigorous than at the present hour. From the presence of tree-ferns, and palms, and other plants which now grow in tropical climates, it has been inferred that at the period at which the coal-beds were deposited the temperature of these parts of the world at least was much greater than it is at present. This theory has been opposed by many who have brought forward the facts that tree-ferns, palms, &c. grow in regions not much warmer than our own. It has also been supposed that the forms of tropical plants in the coal-beds might have been washed from the tropical districts. This however is opposed to the view which is now generally gaining ground with botanists, that the coal-plants have been deposited in the place where they grew, or within comparatively a few miles of it. If the facts we actually possess are soberly examined, they do not amount to more than these:—

1. That coal is of vegetable origin.
2. That at the period of its deposit the earth was covered with a rich vegetation, of which only a small portion has been preserved, and that of this portion all the species and several of the races are totally unknown at the present day.
3. That the climate may possibly have been something milder than it now is, but that there is no evidence in the vegetable kingdom to show that it was materially different from that of the present day.

With respect to the modern theory that species have been gradually becoming more and more completely organised from the earliest period of the creation to the present day; that the simplest forms were those which first appeared; that they were succeeded by others of a more complicated structure, and that it is only in these later days that the most perfectly constructed species have appeared,—it may be observed that the subject is involved in many difficulties, and that the ablest writers and observers have taken different sides of the question.

COAST, GOLD, is a part of Upper Guinea, but its boundary is not exactly determined. Some authorities place its limits at 5° W. long., and 4° 20′ E. long. In the interior are the powerful kingdoms of the Ashantees and Dahomey, on which most of the small states along the coast are dependent. Nearly in the centre of the coast is the English fortress of Accra. There are no harbours along the coast, not even for vessels of a moderate size; and, as the surf is very violent, the trading vessels are obliged to anchor four or six miles from the beach. The whole coast, being near 5° N. lat., is considered one of the hottest countries on the globe. The great rainy season lasts from March till June. September is the hottest month. A short rainy season occurs in October and November. The climate is in general very unhealthy to Europeans.

This coast was formerly much resorted to by European and American vessels for slaves. At present a few vessels fetch gold and ivory; they

give in exchange fire-arms, iron, and iron-ware, tobacco, rum, and some other articles.

The principal English stations have been Cape Coast Castle, Apollonia, Dixcove, Comenda, Annamabo, Tantum, Winnebah, and Whydah; those of the Dutch have been Axim, Boutry, Tacorary, Succondee, Chama, Elmina, Mouree, Berku, Crevecœur; but many of these have been abandoned. Cape Coast Castle, Elmina, and Annamabo are the only places worthy of the name of towns. The possessions of the Europeans are entirely limited to the fortresses, and their governors have no authority over the places near them, which are almost entirely inhabited by natives.

(Robertson's *Notes on Africa;* Hutton's *Voyage to Africa;* Adams's *Remarks on the Countries extending from Cape Palmas to the River Congo.*)

COBÆA'CEÆ, a small natural order of plants, separated by D. Don from Polemoniaceæ.

There are two species of Cobæa, *Cobæa scandens* and *C. lutea.* The *C. scandens* is a great favourite in our gardens, and is a rapid-growing and abundant-flowering climber. It will grow in the open air in summer, and should be trained against a south wall, or against a house, when it flowers profusely. It is adapted for conservatories and greenhouses. It may be propagated by seeds or cuttings.

COBALT. This metal is said to have been employed as early as 1540 for the purpose of giving a blue colour to glass. It was however first procured in a separate state by a Swedish chemist named Brandt, in 1733. Cobalt is of a reddish gray colour, and weak metallic lustre. Its specific gravity is 7.834. It is not acted upon by exposure to air or water, but together they oxidise it. It fuses at a high temperature, probably rather below that of iron, and when cooling it crystallises.

Oxygen and *Cobalt* combine to form *Protoxide of Cobalt,* which is of an ash-gray colour; it is insoluble in water, but readily dissolved by acids, and by ammonia and its carbonate, forming with them a solution of a fine red colour. It consists of $Co^1 O^1$. There is also a *Peroxide of Cobalt* ($Co^2 O^3$): it is a black precipitate, which does not combine with any acids. There is likewise a dark brown *Oxide of Cobalt,* consisting of $C^3 O^4$.

Chlorine and *Cobalt* combine to form a white scaly chloride: it is volatile at about a red heat; but, when air is present, it is decomposed; chlorine is expelled, and peroxide formed. It consists of $Chl^1 Co^1$. The solution when concentrated is of a deep green colour, but by dilution with water it becomes of a pale pink.

Sulphur and *Cobalt* unite to form a *Sulphuret* ($Co^1 S^1$), a *Sesquisulphuret* ($Co^2 S^3$), and a *Bisulphuret* ($Co^1 S^2$). The first is a yellowish gray crystal, with a metallic lustre; the second has a deep gray colour; and the third is a black powder.

Phosphuret of Cobalt is a fusible, brittle, blueish white substance.

Selenium and *Cobalt* combine, and form a laminated substance of a gray colour.

Cobalt forms alloys with arsenic, antimony, tin, zinc, lead, gold, and platinum.

Acids and *Cobalt* form various salts, of which the protoxide is always the base. As they are not very important compounds, we shall describe only a few of them.

Nitrate of Cobalt.—This salt is in deep brownish crystals. Their taste is bitter and acrid, and they redden litmus paper; they are deliquescent, very soluble in water, and dissolved also by alcohol. They consist of 1 cobalt, 1 acid, and 6 water. *Carbonate of Cobalt* is of a light pink colour, tasteless, unaltered by exposure to the air, and insoluble in water, but readily decomposed by acids. It consists of 1 cobalt, 1 acid, and 1 water. *Sulphate of Cobalt* is in the form of rhombic prismatic crystals, of a deep red colour, and a sharp, bitterish, metalline taste; it is soluble in cold water, but insoluble in alcohol. It consists of cobalt 1, acid 1, water 6. There are also *Bisulphate* and *Subsulphate of Cobalt. Phosphate of Cobalt* is a violet-coloured precipitate, which becomes rose-coloured on drying in the air. It is insoluble in water. It is used in making a pigment known by the name of Thenard's or Cobalt Blue.

Cobalt is very extensively employed. Its oxide gives an intense and beautiful blue colour to glass, and hence is used in colouring both glass and porcelain. Blue glass reduced to a fine powder is called *smalts,* or powder blue, and is used for removing the yellow tint of writing-paper and linen.

COBALT ORES. Cobalt is not found in the native state. The chief ores which yield it are *Bright White Cobalt, Tin-White Cobalt, Gray Cobalt, Earthy Cobalt, Sulphuret of Cobalt, Arseniate of Cobalt,* or *Red Cobalt,* and *Sulphate of Cobalt,* or *Red Vitriol.* Most of these are crystallised. They occur most plentifully in Saxony and in Sweden.

COBBETT, WILLIAM, was the son of a farmer and publican at Farnham, in Surrey, where he was born, it is supposed, in 1762. He was almost self-educated, and in May 1783 he came to London, and obtained a situation as copying clerk to Mr. Holland, of Gray's Inn. After remaining here nine months, he enlisted in a regiment of foot, which was sent out to Nova Scotia, and was eventually ordered to New Brunswick. For his excellent conduct he was made a corporal before the regiment left England; and soon after its arrival in America he was raised at once, over the heads of thirty serjeants, to the rank of serjeant-major. Cobbett's regiment did not get back to England till the end of the year 1791, when he obtained his discharge, and soon after brought charges of peculation against four of the officers of his late regiment; which charges, when a court-martial had been appointed, he abandoned for some reason never made known, and withdrew to France. He went thence to New York, in 1792, and in 1794 he made his first appearance as a public writer, in an attack upon Dr. Priestley, then newly arrived in the United States from England, under the title of 'Observations on the Emigration of a Martyr to the Cause of Liberty, by Peter Porcupine.' This pamphlet attracted much notice, and was followed by a long succession of others in the same violent anti-democratic strain, and with the same signa-

ture. His violence gave cause for several actions for libel, to avoid the consequences of which he came to London in 1800, and immediately started a Tory daily paper, under the title of 'The Porcupine;' but it was discontinued after an existence of only a few months. Upon this he commenced his 'Weekly Register,' which rapidly attained a large circulation, and which he kept up without the failure of a single week from its first publication till his death, a period of above thirty-three years. In the course of this time, however, it wholly changed its politics, having eventually become the most determined among the assailants of the government and the champions of democracy. This change however involved him in several actions for libel, for one of which, on the flogging of some local militia-men at Ely in 1809, he was sentenced to pay a fine of 1000*l.* to the king, and to be imprisoned for two years. In April 1817, professedly to escape from the operation of the Six Acts, but partly also, as it is believed, in consequence of certain pecuniary embarrassments, he again visited America, though he still continued the publication of his Register in London. He returned to England in 1819, and in 1820 he made his first attempt to get into parliament, by standing a contest for the city of Coventry, in which he was defeated, as he was also at Preston in 1826.

In 1832 however Cobbett was returned to the first reformed parliament as one of the members for Oldham. In the course of his parliamentary career he made several effective speeches; but his success in this new field did not, on the whole, come up to expectation. His death took place unexpectedly, and after a very short illness, June 18, 1835.

A complete catalogue of Cobbett's publications would occupy more space than we can afford. Among those not already mentioned that have attracted most attention, are his 'Year's Residence in America;' his 'Emigrant's Guide;' his 'Poor Man's Friend;' his 'Cottage Economy;' his 'Village Sermons;' his 'Grammar of the French Language;' his 'English Grammar,' in a Series of Letters to his Son; and his 'Rural Rides,' reprinted from the 'Register.' And he is understood to have been the projector and original conductor of the 'Parliamentary History,' which for some years bore his name.

COBI. [GOBI.]

COBIJA. [BOLIVIA.]

COBI'TIS, a genus of fishes belonging to the *Abdominal Malacopterygii* and family *Cyprinidæ*. The only British species described by Yarrell is that well-known little fish so common in our rivers, called the Loach (*Cobitis barbatula*, Linn.). The spined Loach or Loche (*C. tænia*, Linn.) is placed by Mr. Gray in a distinct genus termed *Botia*. It is rather rare, but is said to be not uncommon in the streams of Wiltshire and Cambridgeshire.

COBLENZ, an administrative division in the Prussian Rhein-Provinz, is divided by the Rhine into two unequal parts, the larger portion being on the left bank. It is bounded E. by the duchy of Nassau, N. by the circle of Cologne, S.W. and W. by those of Trier and Aachen, and S. by Rhenish Bavaria, the principality of Birkenfeld, and Hesse Homburg. Its area is about 2320 square miles. The population in 1843 was 489,900. The surface of the country is generally hilly. The chief rivers, besides the Rhine, are the Nahe, the Moselle, and the Nette, which enter the Rhine on the left bank; the Lahn, Sayn, and Wied, on the right. The division is well cultivated, and the landscape is agreeably diversified with deep valleys, fertile plains, vineyards, and naked rocks. The declivities of the hills, along the banks of the Rhine and Moselle, are covered with vineyards. [RHEIN-PROVINZ.]

COBLENZ, a fortified city in the Prussian Rhein-Provinz, stands in 50° 21′ N. lat., 7° 30′ E. long., 54 miles S.S.E. from Cologne, and has a population of about 22,000. It occupies the site of the ancient *Confluentes*, a city which grew up around the castle built by Drusus at the confluence of the Moselle and the Rhine; and the modern name is but a slight corruption of the ancient one. The town stands in the fork between the two rivers, on the left bank of the Rhine and the right of the Moselle, and is connected by a bridge of boats with the castle of Ehrenbreitstein on the right bank of the Rhine.

Coblenz is very irregularly built, with narrow streets and old houses. In what is still called 'the Old Court' stood the Roman castle built by Drusus, which became subsequently the palace of the Frankish monarchs, the German emperors, and the archbishops of Trier, or Trèves. The 'Clement,' or New Town, which is very handsome, was built by the last electoral prince, Clement Wenceslaus of Metternich. Among the public buildings are the Church of St. Castor, built in 836, in which the three grandsons of Charlemagne met to divide his empire among them; the ancient town-hall, the former castle of the elector of Trèves, now a japan-ware factory, both of which are in the street facing the bridge over the Moselle; the Stamm-Haus in which Prince Metternich was born, in the same street; the hospital; and, in the New Town, the modern Electoral Palace, which is now used as a court-house; the theatre; the assembly-rooms; and the former convent of the Jesuits, now occupied as a grammar school, beneath which are cellars of vast extent. There are numerous places of education, a training school for teachers, a musical institution, savings' bank, orphan asylum, and various other charitable institutions. Besides the valuable town library, there are many private collections of paintings, coins, and antiquities.

Coblenz is the head-quarters of the 8th corps of the Prussian army. It is a free port, and carries on a brisk trade in colonial produce and other articles up and down the Rhine, the Moselle, and the Lahn. The exports consist of wine, mineral waters, corn, iron, volcanic products, with which the country abounds, bark, stone, and potter's clay. The leading articles of manufacture are linen, calico, japan-ware, furniture, and carriages. Many of the inhabitants are engaged in the culture of the vine. Coblenz is said to surpass almost every town on the Rhine in beauty of situation,

and the views from the heights of Ehrenbreitstein, Pfaffendorf, and the Karthausenberg, are peculiarly beautiful. Steamers ply regularly to Cologne, Mayence, and Trèves.

COBURG. [SAXE-COBURG-GOTHA.]

COBURG, the capital of the principality of Coburg, and one of the residences of the Duke of Saxe-Coburg-Gotha, stands in a picturesque valley on the banks of the Itz, in 50° 15′ N. lat., 10° 50′ E. long., and has about 9500 inhabitants. It is an ugly town; the houses are small, the streets rough, and in many places overgrown with grass. The ducal palace of Ehrenburg, built in 1549, has several splendid apartments, a library of 26,000 volumes, and a collection of natural history, minerals, coins, and prints. Part of the ancient ducal castle, which stands on an eminence above the town, is now used as a prison and house of correction, but the apartments occupied by Luther are still shown in their original condition. The government buildings, the town-hall, five churches, the arsenal, orphan asylum, and three hospitals are among the other places of note in the town. The gymnasium, founded in 1605 by Duke John Casimir, hence called Casimirianum, has all the rights and privileges of a university. The inhabitants carry on manufactures of woollens, cottons, linen, furniture, buckles, jewellery, chocolate, tools, &c. They have also dyehouses, and a considerable trade in wool, cloth, cottons, horsehair, flour, seeds, &c. Near the town are the ducal country seats of Rosenau and Calemberg, round which there are parks and forests abounding in game.

COCA, the dried leaf of *Erythroxylon coca*, is one of those stimulating narcotics which belong to the same class with tobacco and opium, but is more remarkable than either of them in its effects upon the human system. The plant is found wild in Peru, according to Pöppig, in the environs of Cuchero, and on the stony summit of Cerro de San Cristobal. It is cultivated extensively in the mild but very moist climate of the Andes of Peru, at from 2000 to 5000 feet above the sea: in colder situations it is apt to be killed, and in warmer districts the leaf loses its flavour.

The effects of this drug are said to be of the most pernicious nature, exceeding even opium in the destruction of mental and bodily powers. The coca leaf is chewed by the Peruvian, mixed with finely powdered chalk, and brings on a state of apathy and indifference to all surrounding objects. The desire for this drug increases so much with indulgence in it, that a confirmed coca-chewer is said never to have been reclaimed.

The immoderate addiction of the Peruvians to the use of this drug is such that their forests have long since ceased to be able to supply their wants; and the cultivation of the plant has been carried to a very great extent, not only under the Incas, but beneath the local government of the Spaniards, who seem to have been no more able to resist the temptation of a large revenue from the monopoly of this article than European nations from the consumption of ardent spirits. The cultivation of coca is therefore an important feature in Peruvian husbandry.

The exciting principle of the coca has not yet been inquired into. It is stated by Pöppig to be of so very volatile a nature that leaves only 12 months old become perfectly inert and good for nothing. 'Large heaps of the freshly dried leaves, particularly while the warm rays of the sun are upon them, diffuse a very strong smell, resembling that of hay in which there is a quantity of melilot. The natives never permit strangers to sleep near them, as they would suffer violent head-aches in consequence. The Peruvians never use them without the addition of burnt lime, which excoriates the mouth of a stranger. The leaves yield an infusion of a green colour, which produces the same terribly stimulating effects on the system as the chewed leaf. The practice of indulgence in this pernicious habit gives rise to numberless diseases: jaundice and derangement of the nervous system, with pains in the head, and such a prostration of strength that the patient speedily loses all appetite. A total inability to sleep ensues, which aggravates the mental depression of the unhappy individual, who, spite of all his ills, cannot relinquish the use of the herb to which he owes his sufferings, but craves brandy in addition. The appetite becomes quite irregular, sometimes failing altogether, and sometimes assuming quite a wolfish voracity, especially for animal food. Thus do years of misery drag on, succeeded at length by a painful death.'

(Pöppig, *Reise in Chile*, &c., vol. ii.; Hooker, *Companion to Botanical Mag.*, i. and ii.)

COCCO'LOBA, a genus of plants belonging to the natural order *Polygonaceæ*.

C. uvifera, Sea-side Grape, is a tree, the leaves, wood, and bark of which are powerfully astringent, and a decoction of them is evaporated to form the substance called Jamaica kino. The astringency depends on the presence of tannin, but there is in addition present in the wood a red colouring matter which is used as a dye. The wood is also valued for cabinet-work. The fruit is eatable, and is exposed for sale in the West Indian markets, but is not valued much. It is a native of the sea-coasts of most of the West Indian Islands and the adjoining shores of America. There are several other species of Coccoloba natives of the West Indies. They are all evergreen trees.

COCCO'STEUS, a genus of fossil fishes, with a tuberculated scaly covering, from the old red sandstone of Gamrie, Cromarty, Caithness, and the Orkney Islands. (Agassiz.)

CO'CCULUS, a genus of menispermaceous plants, consisting of climbers. The species are usually bitter febrifuges. *Cocculus crispus*, a twining plant found in Sumatra and the Moluccas, with a tubercled or warted stem, is employed by the Malays for the cure of intermittent fevers. Another plant, the *Menispermum fenestratum* of Roxburgh, is in great repute among the Cingalese, who slice it, steep it in water, and swallow it along with the infusion as a stomachic. *Cocculus villosus*, a plant common in the hedges of Bengal, is of considerable importance to the Hindoos, who use it in venereal complaints.

The species most important to Europeans is that which produces the celebrated Calumbo Root,

Cocculus palmatus, from which a valuable bitter is procured. This plant is a native of Mozambique and Oibo, abounding in the thick forests that cover the shores of those countries, and extending inland for fifteen or twenty miles. The plant is now cultivated in the Isle of France.

The name given to this genus is that of a kind of seed imported from the East Indies under the name of *Cocculus Indicus*, possessing a powerful, bitter, poisonous principle, which, according to Goupil, exists principally in the kernel. It is found in the forests of Malabar.

Cocculus Indicus Berries are the fruit of the *Cocculus suberosus*, or *Menispermum cocculus*. Besides being occasionally used in medicine, it is a poison which is used for destroying fish, and has also been extensively used by brewers as a substitute for hops—an adulteration which is prohibited in Britain by severe statutes. It seems to act by exhausting the irritability of the heart; and, if the dose be considerable, its fatal effects are very speedily displayed. What renders it a more redoubtable agent is the circumstance of its leaving scarcely any trace of its presence on the coats of the stomach. Cocculus Indicus is never used internally in the practice of medicine; but an ointment formed of the powdered berries is very efficacious in some cutaneous diseases, such as *Porrigo Capitis*, and *Sycosis Menti*.

Calumba is the root of the *Cocculus palmatus*, a native of the forests on the east coast of Africa, whence it is sent to Ceylon, and thence to Europe. It occurs in the form of transverse sections, the bark of which is thick and easily separable; the woody portion is spongy, of a yellow colour, and when old much perforated by worms. The odour is faintly aromatic, the taste bitter and slightly acrid. It contains much starch, a yellow azotised matter, a yellow bitter principle, traces of a volatile oil, woody fibre, salts (chiefly of lime and potassa), oxide of iron, and silex. The active principle is *Calumbine*, which may be obtained either by alcohol or æther. As Calumba contains nothing which can decompose the salts of iron, it may be given along with them. The powder is a good form; the infusion soon spoils, but is otherwise a very excellent form; a tincture or extract retains the virtues, and keeps a long time.

Other roots are often fraudulently substituted for Calumba. Slices of Bryony root are often employed to adulterate it.

Calumba acts chiefly upon the mucous membrane of the stomach, and upon the secretion and quality of the bile. It is not however without power over the nervous system.

COCCUS. [GALLINSECTA.]

COCHABAMBA. [BOLIVIA.]

COCHIN, a town and sea-port on the western coast of Hindustan, in 9° 51′ N. lat. and 76° 18′ E. long., is the place where the first European settlement was formed in the East Indies. In 1503 the Portuguese fleet, under the conduct of Alfonso and Francisco Albuquerque, obtained from the sovereign of Cochin permission to erect a fortress there in recompense for the assistance they had given him in his wars with the Zamorin of Calicut. The town was taken from the Portuguese by the Dutch in 1663. The trade continued to flourish under the Dutch government till 1795, when the town was taken possession of by the British, to whom it was finally ceded in 1814.

There is hardly any place in Hindustan except Calcutta better situated for trade than Cochin. It is the best port in the presidency of Madras, and the only port for ship-building, and there are no places throughout the whole extent of the western coast which afford shelter to large vessels except Bombay and Cochin. But its chief advantages as a place of trade are derived from the fertile country in its vicinity, and its extensive means of communication by water. In this part of Hindustan is found a very remarkable system of inland navigation, called the Backwater. This is a lagoon of a peculiar description. It extends from Chowgaut (10° 40′) on the north to Trivanderan, the capital of Travancore (8° 30′), on the south, a distance of one hundred and seventy or eighty miles, and terminates within fifty miles of Cape Comorin. The Backwater runs nearly parallel to the sea, sometimes at the distance of a few hundred yards, at others at four or five miles. Its breadth varies from twelve and fourteen miles to two hundred yards; its depth from many fathoms to a few feet. Into this Backwater, as into a grand trunk, all the rivers from the east discharge their waters. There are six channels of communication between the Backwater and the sea, but only one is navigable for ships; and this is that on the southern bank of which the town of Cochin is built. There is a bar at its mouth, but the depth of the water on it is seventeen or eighteen feet at high water of spring-tides. Within the bar, the Backwater expands into a fine æstuary, three, four, and six miles wide, at least twelve miles long, and deep enough for the largest vessels.

The country through which this water-communication extends is not inferior in fertility and productiveness to any part of Hindustan of equal extent. The narrow strip of land between the Backwater and the sea is indeed sandy, but its lower tracts are thickly overgrown with cocoa-nut palms, which yield a great quantity of fruit. The country east of the Backwater is low and level along its banks, and produces rich crops of rice. Farther inland it rises into low hills, partly covered with high forest-trees and partly with grass; but the valleys between them are exceedingly fruitful, and produce in abundance, and of the best quality, all the numerous productions for which the coast of Malabar is famous. Timber of all kinds, some more valued by the natives for maritime purposes even than teak, is to be had in unlimited abundance, and at the lowest price. Much timber is sent to Bombay, but hardly any vessels are built at Cochin for European merchants. The Imaum of Muskat however has perceived the value of this harbour for ship building, and most of his vessels have been built there. The trade of this place, though it has much declined, is still considerable. Europeans rarely visit this port; but an active commerce is carried on between it and Bombay in country vessels, especially in timber. The trade with

Arabia and the countries surrounding the Persian Gulf is more important. As these countries have no forests, they receive from Cochin all the timber required for repairing their different craft. Rice, cocoa-nuts, and spices are exported to them to a great extent.

(Stavorinus, *Voyages to the East Indies;* Buchanan, *Journey through Mysore, Canara, and Malabar;* Brown, *On the Natural Advantages of Cochin as a place of Trade,* in London Geog. Journal, vol. iii.)

COCHIN, CHARLES NICOLAS, called Cochin fils, a celebrated French designer and etcher, was the son of C. N. Cochin the elder, and was born at Paris in 1715, and died there in 1788. Cochin was one of the best and most productive of the French engravers. His prints amount to upwards of fifteen hundred; among the best are the fourteen large etchings of the sea-ports of Vernet. A 'Catalogue Détaillé' of his works was published by Jombert in 1770, and copied by Heineken into his Dictionary, with the addition of some works executed after 1770.

Cochin was the author of 'Observations sur les Antiquités d'Herculanum,' in conjunction with M. Bellicard; and of 'Voyage Pittoresque d'Italie,' 3 vols. 8vo., 1756; 'Réflexions sur la Critique des Ouvrages exposés au Louvre;' and some other works connected with the fine arts.

(Heineken, *Dictionnaire des Artistes,* &c.; Huber, *Manuel des Amateurs,* &c.; *Biographie Universelle.*)

COCHIN-CHINA is in that part of Eastern Asia which commonly goes by the name of India beyond the Ganges, of which it forms the eastern portion. It extends from 8° 40′ to about 23° N. lat., and from 102° to 109° 20′ E. long. Its length from north to south is about 980 miles, but in width it varies from 100 to 300 miles. On the west it borders on the kingdom of Siam, or Shan; on the north-west, on the unknown regions of Laos, or Lactho; and on the north on the Chinese provinces of Yunnan, Quang-si, and Quang-tong (Canton). To the east of it extends the sea called by the Chinese Nan-Hay, or the Southern Sea, which here forms an extensive gulf between the northern province of Cochin-China and the island of Hainan called the Gulf of Tonkin. To the south of Cochin-China extends the southern part of the China sea.

A mountain range runs through the country nearly in a northern direction, and several short offshoots branch from it towards the sea, containforming summits which reach a height of 4000 feet. One of these lateral ranges is that which forms the boundary between Cochin-China and Tonkin, in about 17° 30′ N. lat. It contains a depression, forming a mountain pass, about six miles in width, which is shut in by a wall, and traversed by an artificial road, which leads from Huè to Kecho, and is so well made that it is said not to be inferior to any road in Europe; the length of this artificial road is estimated at 400 or 500 miles. There are a similar pass, wall, and road, between Cochin-China and Quang-si.

The northern part of Cochin-China, which formerly constituted the separate kingdom of Tonkin, comprehends an extensive plain, nearly surrounded by mountains, which increase in height as they recede from the sea. This plain appears to extend above 100 miles in length and width. Being very low, a great portion of it is annually inundated by the river Song-ca and its two feeders Ho-ti-kiang and Li-sien-kiang, which fertilise the soil, so that two or three crops of rice are annually cut. The country east of the mountain-range consists of an alternation of small plains and intervening mountain ridges: most of the former are well irrigated and cultivated. Some of the districts near the sea are almost wholly mountainous. West of the mountain-range is an immense plain, formed mostly of the alluvium of the great river Maekhaun, and containing a great number of swamps and fresh-water lakes. Besides the Maekhaun, the river Saung waters this plain. A portion of the country westward of the mountain-range once formed the chief part of the kingdom of Cambodia.

The great river of Camboja, or Cambodia, called the Maekhaun, rises on the high table-land of Eastern Asia, at no great distance from the upper course of the Yang-tse-kiang. It breaks through a mountain barrier on leaving China, and sends off various lateral branches on its subsequent course through Cochin-China. About 150 miles from its mouth is the ancient capital of Cambodia, Pontaipret, to which European vessels ascended in the seventeenth century; but this navigation has been discontinued. The river divides into many mouths near the sea, inclosing an extensive delta: most of these branches are navigable.

The climate of the plain of Cambodia resembles that of Bengal; but the climate of the countries east of the mountains is similar to that of Coromandel. Rainy seasons, typhons, and hurricanes occur most violently near the Gulf of Tonkin. The limits of observed temperature have been 57° and 103° Fahr. The climate is generally healthy. Gold, silver, and iron mines are worked in Cochin-China, and are said to employ 30,000 Chinese miners.

Rice, which is the principal article of food, is very extensively cultivated in the plains of Tonkin and Cambodia. Indian corn, earth nuts (*Arachis hypogœa*), and the *Convolvulus batatas* are also cultivated. The sugar-cane, cinnamon, and cotton are cultivated. Silk is produced, and a coarse kind of tea is grown.

The population of Cochin-China has been variously estimated at from 5 to 22 millions. It is therefore evident that no certain data exist for determining the numbers. The country contains several nations. One is the Anamese, who belong to the same race as the Chinese, but use a different language. The inhabitants of Cambodia bear, in manners, laws, and religion, a nearer resemblance to the Siamese than to the Anamese. Two other nations, the Loye and the Moi, live among the mountains; their languages differ from the former and from each other.

The political division coincides nearly with the historical division of the country. Anam, or the eastern portion, is divided into two provinces—Tonkin the northern, and Cochin-China the south-

ern; and the boundary-line between them, at about 19° N. lat., is nearly the same line which separated the ancient kingdom of Tonkin from Cochin-China; only two small provinces have been detached from Tonkin, and added to Cochin-China. That portion of Cambodia which has been united to Cochin-China constitutes a province by itself.

Tonkin or Tonking comprehends the most northern and the most fertile and populous portion of Anam. The capital Cachao, or Bakthan, is said to contain 150,000 inhabitants, and to carry on much commerce with the surrounding country. Cochin-China Proper forms the southern portion of Anam; it contains the towns of Huè, Han, Faifo, Qui-nhon, Phu-yen, and Nhatrang, and has numerous safe and spacious harbours. Cambodia comprises the whole of the ancient kingdom of Cambodia, except the province of Batabang. Saigun, Pontaipret or Cambodia, Panompeng, and Kang-kao are the chief towns.

The Cochin-Chinese have made some progress in most of the arts of civilised life. They manufacture ships and galleys, lacquered ware, coarse cottons and silks, filagree work, cast iron, and earthenware; but most of their productions are coarser than those of the Chinese.

The great number of excellent harbours and valuable products would seem calculated to attract foreign vessels to this country. But, after the feeble attempts of some European nations to establish a regular trade were frustrated by the long internal wars of the eighteenth century, the commerce of Cochin-China was limited to its intercourse with China and with Singapore. Many articles of English manufacture reach Cochin-China, but through indirect channels. Sir J. F. Davis has recently (in 1847) attempted to open a direct trade between England and that country, but ineffectually.

COCHINEAL is extremely rich in the finest red colouring matter, and has been long employed in scarlet dyeing, and in the manufacture of carmine. It consists of a colouring matter, a peculiar animal matter, a fatty substance, and several salts. The chief use of cochineal is the dyeing of scarlet. The fine colour which it yields is converted to this tint by means of chloride of tin, usually called muriate of tin.

The insect which constitutes cochineal feeds chiefly upon *Cactus cochenillifera* and *C. opuntia*. The female insect only is collected. Several varieties are distinguished in commerce, and have different degrees of value attached to them, dependent chiefly upon the different methods employed to kill and dry the insects. When dried, they resemble small grains, scarcely so large as a pepper-corn, ovate, convex above, plane below, transversely furrowed, externally blackish brown, but as if dusted with a white powder, light, friable, the internal substance consisting of extremely small grains, obscurely purple, but when reduced to powder of a rich purple. Inodorous, but with a bitter sweet acrid taste. They impart to water or alcohol by digestion an intensely red colour.

Cochineal has hitherto been employed mostly as a colouring material, either of tinctures, or of other things, the nature of which it is wished to disguise; but it is also used to a small extent in medicine.

Previous to the revolt of the Spanish Amerian provinces, almost all the trade in cochineal with the different markets of Europe was carried on through Spain, and chiefly through Cadiz; but since that event the markets of consumption are supplied with cochineal either direct from the places of production, or from neighbouring stations, to which the article has found its way in the natural course of commerce. Representing a considerable value in a small bulk, cochineal is frequently used, with great convenience to merchants, as a medium for making remittances, and hence the comparatively circuitous route by which the greater part of it reaches the places of ultimate consumption. The quantity of cochineal imported into Great Britain in 1845 was 9,784 cwts., chiefly from the West Indies and Mexico.

COCHLEARIA, a genus of plants belonging to the natural order *Cruciferæ*. The species are annual or perennial herbs.

One of the most common species of this genus, as formerly defined, is the common Horse-Radish (*Cochlearia Armoracia*). This species however is now referred by some botanists to a new genus, *Armoracia*. The Horse-Radish, though described in books on British botany, can scarcely be considered a native of Great Britain, as the wild specimens are evidently escapes from gardens.

C. officinalis, common Scurvy-Grass, is a native of Great Britain, in muddy places near the sea-coast. This plant varies much in size, and two or three varieties have been described. When fresh, it has a peculiar smell and a bitter acrid taste, which are quite lost by drying. The fresh plant is a stimulant, and possesses the antiscorbutic virtues of the whole order. It has however a peculiar reputation in the disease called scurvy: hence its common name. It is sometimes used as a salad. *C. Danica* is found in Great Britain, in a few places on the sea-coast. *C. Anglica*, English Scurvy-Grass, is a native of muddy sea-shores about the mouths of rivers, especially in Great Britain.

There are several other species of Cochlearia described; they are however most of them insignificant plants, inhabitants of northern climates. According to Mr. J. Knight, Horse-Radish thrives best in deep, soft, sandy loam, that is not very dry in summer nor inundated in winter. The situation must be open.

COCHLIODUS, a genus of Placoid fishes, from the carboniferous limestone of Armagh and Bristol. (Agassiz.)

COCK. [POULTRY.]

COCK, or STOP-COCK, a kind of valve contrived for the purpose of permitting or arresting at pleasure the flow of a liquid through a pipe. Those in most common use consist of a short tube of brass, intersected by a nearly cylindrical plug, capable of being turned on its axis at pleasure, and so perforated or cut that, while in one position it completely prevents the passage of fluid through the pipe, it may be so turned as to permit the fluid to pass through it, and

consequently to flow through the pipe. The kind of cock usually employed, under the name of a *tap*, for drawing off the contents of barrels, usually terminates in a curved *nose*, or spout, from which the liquor may be conveniently received in a jug or other open vessel; but, where it is desired to transfer the liquor from the cask immediately to bottles, the nose is prolonged into a long slender tube, which will enter the neck of a bottle, and obviate the necessity for a funnel. Longitudinal furrows should be cut on the outside of the tubular nose, to allow the escape of air from the bottle as the fluid enters. Other cocks are adapted for insertion in metallic cisterns or boilers, and fitted with a flange to bear against the outer face of the cistern, and a nut, wormed on to the portion of the tube of the cock which passes into the cistern, by which they may be screwed up firmly. Others again are adapted for soldering to the end of a leaden pipe, such as the service-pipe for laying water on to a house. Some stop-cocks, again, have no nose or spout, but are made alike at each end, for the purpose of being soldered between two lengths of leaden pipe.

In some cocks the plug is so contrived as either to contain a piece of cork, which may be turned so as to close the pipe, or to revolve within a hollow cylinder of cork, with arrangements for opening or closing a passage through it at pleasure. In others the principle of the revolving plug is entirely departed from, and the pipe is closed by means of a flat disc of metal, covered with a leather washer, and screwed up firmly against the end of the pipe, or by a conical or globular valve similarly applied. In such cocks caoutchouc forms an excellent substitute for leather. Another ingenious class of cocks comprises those furnished with contrivances for admitting air to a barrel as fast as the liquor is drawn off, and thereby superseding the use of a vent-peg. Another class, of which a good example is described in vol. xxxvii. of the 'Transactions of the Society of Arts,' p. 94, are furnished with apparatus for *locking* the cock.

Cocks are most commonly made of *tap-metal*, a peculiar alloy of inferior brass, or rather copper saturated with lead. Fine brass is sometimes used; as also is a white alloy made to resist the action of vinegar and other corrosive liquors. For such liquors however cocks of porcelain or stoneware are to be preferred. Even wood is occasionally employed; and attempts have been made to manufacture cocks of cast-iron.

The *four-way cock* consists of a plug perforated with two distinct passages, and mounted in a barrel into which four separate pipes or channels open. Its object is to connect the four passages with each other in alternate couples, either by a continuous revolution upon its axis, or by an alternating motion through one-fourth part of a revolution; and it has frequently been applied to steam engines as a means of alternately admitting steam to and allowing it to escape from each end of the engine-cylinder.

COCK OF THE WOOD. [CAPERCAILLIE.]

COCKATOO. [PSITTACIDÆ.]

COCKSCOMB. [CELOSIA.]

COCK'S-FOOT GRASS, a perennial agricultural plant, the *Dactylis glomerata* of botanists, which yields a valuable food for sheep very early in the spring, before its young leaves have had time to become tough.

COCKATRICE, one of the names of the fabled Basilisk, or Little King of the Serpents (in Greek *βασιλισκος*, in Latin *régulus*). We need not say that no such animal exists; and when mention is made of these basilisks or cockatrices in the Holy Scriptures we may safely understand that nothing more is intended than some exceedingly poisonous serpent, taken as a type of sinful men, or of pleasures in themselves sinful, or of the principle of evil. In the present translation of the Bible, the terms *basiliscus* and *regulus* are generally but not always translated asp or adder; and indeed when, as in Jeremiah viii. 17, the *cockatrice* is mentioned, we may easily perceive that a poisonous serpent only is meant. In other places, as we have said, the same term is rendered into asp and adder; and this want of strict but unnecessary uniformity probably arises from the fact that in the reign of James I. different scholars had their allotted portions for translation, added to which, clear ideas in matters of natural history were not possessed even by the most learned.

Of the most ancient profane writers, Aristotle, as might be expected, says nothing about the cockatrice; but Pliny, who dearly loved a fable, mentions the basilisk more than once, enters at length into its deadly attributes, and records the praises with which magicians celebrate the efficacy of its blood, which was considered an admirable antidote against sorcery. ('Hist. Nat.,' book viii. c. 21; book xxix. c. 4.) Dioscorides, Galen, Solinus, Ælian are eloquent upon basilisks, as are Avicenna, Grevinus, Scaliger, and many more.

The characters of this fabulous animal are might, dominion, and power; it slays with the glance of its eye; its breath withers the shrubs, and even splits the rocks; and the thrower of the spear by which it is wounded is not only killed, but also the horse on which he is mounted; the venom darting along the shaft more rapidly than lightning.

> 'Quid prodest miseri Basiliscus cuspide Mauri
> Transactus?—velox cucurrit per tela venenum
> Invaditque manum.'—LUCAN.

The cockatrice or basilisk plays its part in the legends of the saints, and figures conspicuously in the writings of some of our older compilers of zoological scraps and traditions. (Jonston.) Even Browne ('Inquiries into Vulgar and Common Errors'), although he treats the subject with glimmerings of common sense, admits that the eye-glance or the breath of the basilisk may shoot forth or diffuse 'venenation.' But what was this basilisk or cockatrice? Aldrovandus figures it as a lumpy scaled lizard, with a long tail and a cock's head, crowned with a diadem, and having four pairs of ungainly legs. Another figure represents it as a snake, with the 'likeness of a kingly crown' upon its head. After all, the subject is not worth a moment's attention. The basilisk may serve the poet, and we quarrel not with Shakspere, when he makes Lady Anne, in answer to Richard III., say, relative to her eyes, 'Would they were basilisks

to strike thee dead;' but, in sober sense, we would say that he who troubles his mind about this unreal creature, or investigates its supposed history, loses time which might be much better employed.

COCKER, EDWARD. This writer, whose name is so well known in England, was born about 1631, as appears from the inscription to one of the portraits cited by Granger in his 'Biographical History of England.' He was an engraver, and a teacher of writing and arithmetic. He is said to have published fourteen books of exercises in penmanship, some of them on silver plates. His real reputation is that of a calligrapher: Evelyn cites him, among others, as comparable to the Italians. Cocker died before 1677, and certainly later than 1671.

The celebrated work on arithmetic was not published by Cocker himself, but by John Hawkins in 1677, who also published a 'Decimal Arithmetic' in 1685, and an 'English Dictionary' in 1704, both bearing the name of Cocker. Mr. De Morgan, in his recently published work on arithmetical books, has maintained at length, that Hawkins forged all these works, and passed them on the world as Cocker's, by help of a real or pretended possession of Cocker's papers. Cocker's work went through more than forty editions. It is difficult to account for its success: better books had preceded it.

The *real* Cocker's 'Arithmetic' was published in his lifetime, and seems to have been an engraved exercise book. Just after his death, J. H., who we must presume to have been no other than John Hawkins, published, in 1675, the eighth edition of the 'Young Clerk's Tutor enlarged,' a law stationers' manual, with forms, &c., and engraved copies of the court-hands annexed. This was, no doubt, a genuine work. Hawkins, finding Cocker's name productive, seems to have thought of the arithmetic, which he makes Cocker say, in the preface, was the first thing he had done in arithmetic.

COCKERMOUTH. [CUMBERLAND.]

COCKLE. [CONCHACEA.]

COCKROACH. [BLATTIDÆ.]

COCOA. [CACAO; THEOBROMA.]

COCOA-NUT. [COCOS.]

COCOON. [BOMBYCIDÆ; PUPA.]

COCOS, a genus of palms containing several species, the most interesting of which is the common Cocoa-Nut, *Cocos nucifera*.

This plant is found all over the tropical parts of the world, especially in the vicinity of the sea, growing within reach of salt water, and establishing itself upon reefs and sand-banks as soon as they emerge from the ocean. Its principal range is said by Mr. Marshal to be between the equator and the 25th parallel of latitude, and in the equinoctial zone to an altitude of about 2900 feet. Its great importance to man has caused it to be cultivated wherever the climate is favourable to its growth; the whole Brazilian coast from the river San Francisco to the bar of Mamanguape, a distance of 280 miles, is, with few breaks, thus occupied; and it was estimated that in the year 1813 no fewer than 10,000,000 trees were growing on the south-west coast of Ceylon.

The cocoa-nut palm rises like a slender column to from 60 to 90 feet in height. Its stem is of a soft fibrous nature, and is marked on the outside by rings produced by the fall of its leaves; two such leaves are said to drop off annually, and consequently the age of an individual is equal to half the number of the annular scars of its stem. About a dozen or fifteen leaves, each from 12 to 14 feet long, crown the summit of the stem; and, as these are not inaptly compared to gigantic ostrich feathers, they give the plant the air of an enormous tuft of vegetable plumes. One tree produces in good soils from 80 to 100 nuts annually.

In hot countries the uses to which the cocoa-nut tree is applicable are innumerable. The roots are chewed in place of the areca-nut; gutters, drains, and the posts of huts are formed from the trunk; the young buds are a delicate vegetable; shade is furnished by the leaves when growing, and after separation from the tree their large size and hard texture render them invaluable as thatch for cottages; they are moreover manufactured into baskets, buckets, lanterns, articles of head-dress, and even books, upon which writing is traced with an iron stylus. Their ashes yield potash in abundance; their midrib forms oars; and brushes are formed by bruising the end of a leaf with a portion of the midrib adhering to it. From the juice of the stem, a kind of palm wine, and subsequently an ardent spirit, are prepared; the farinaceous matter contained in the stem is a good substitute for sago; and a coarse dark-coloured sugar, called jagghery, is obtained from inspissating the sap. This jagghery, mixed with lime, forms a powerful cement, which resists moisture, endures great solar heat, and will take a fine polish. The ripe fruit is a wholesome food, and the milk it contains a grateful cooling beverage; indeed these together constitute the principal sustenance of the poorer Indians in many countries. The fibrous bark is used to polish furniture, as brushes, and to form a valuable elastic cordage, called *coir*; the fibrous matter of the husk is also employed to stuff mattresses, and a manufacture of it into cordage, mats, sacking, &c. has lately sprung up in Great Britain. The shell is manufactured into drinking-vessels and vessels of measure; and, finally, the albumen, or white solid matter contained within the shell, yields by pressure or decoction an excellent oil; pressure is the method usually employed. This oil is not only employed for burning, but in the manufacture of torches, and in the composition of pharmaceutical preparations; and mixed with dammer (the resin of *Shorea robusta*) it forms the substance used in India for covering the seams of boats and ships.

Cocoa-nuts are brought to Europe as wedges to set fast the casks and other round packages in the cargo of vessels; their freight therefore costs nothing.

COCUMI'GLIA, the name of a kind of plum (*Prunus cocumilia*) found wild in Calabria, and having the reputation of being a powerful febrifuge. The bark of this species is in extensive use for the cure of the intermittent fevers of Calabria, in decoction or extract, where it is preferred to cinchona.

CODE, CODEX. The original meaning of the Latin word Caudex or Codex was the trunk

or stem of a tree. Before the use of more convenient materials, wooden tablets were employed for writing on. Such a written tablet was called Codex, of which Codicillus is a diminutive.

The notion of the word was then extended, and it had several new significations. 1. Codex denoted any hand-writing on parchment, or paper, or ivory, or other material. 2. The diminutive Codicilli (codicil) was used in the plural number in various senses, and finally in that of a testamentary writing. 3. A collection of laws was also called Codex, and is now called a Code in modern languages, as in English and French. In this sense the word is now most commonly used. There are several kinds of codes. A code may be made by merely collecting and arranging in a chronological or systematic order the existing laws of a state. Such a collection is either made by public authority, as was the case with the Codex Theodosianus and Codex Justinianeus, or by private individuals, as was the case with the Codex Gregorianus and Hermogenianus. A code (in German *Gesetzbuch*, book of laws), by which the legislative power makes a new system of laws, is very different from a compilation of existing laws. A code, though it may adopt many existing laws or rules of law, is now generally used to express a comprehensive body of law suited for all the purposes of the community for which it is intended; and it may contain many new principles and new rules of law.

CODEIA, an alkali discovered by Robiquet in opium, is obtained as an accidental product in the preparation of hydrochlorate of morphia by Gregory's process. Codeia crystallises in regular octohedrons, which are colourless and transparent. They have a bitter taste, a strong alkaline reaction, are very soluble in alcohol and in æther, but insoluble in solutions of the fixed alkalis, which distinguishes codeia from morphia. It does not redden nitric acid, nor render chloride of iron blue. Codeia is much more soluble in water than morphia, 1 part requiring about 80 parts of cold water and 17 of boiling water for solution. When heated in a small quantity of water, it liquefies, and forms oleaginous drops, which are heavier than water. Its composition is C^{35} H^{20} NO^5. Codeia forms salts with acids, some of which crystallise, as is the case with the nitrate. Their solutions are precipitated by tincture of galls, which produce no effect on the salts of morphia.

CODES, LES CINQ, is the name given to several compilations of law, civil and criminal, made in France after the Revolution, and under Bonaparte's administration. They consist of the Code Civil, Code de Procédure Civile, Code de Commerce, Code d'Instruction Criminelle, and Code Pénal. To these has been added the Code Forestier, or regulations concerning the woods and forests, promulgated under Charles X. in 1827. Hence the whole collection is sometimes called 'Les Six Codes.' But even this name is not correct, as, in addition to the six already mentioned, there are the following codes: Code Administratif; Code de l'Armée; Code des Avocats; Code de la Chasse; Code de la Contrainte par Corps; Code des Contribuables; Code des Cultes; Code Electoral; Code de l'Enregistrement (which includes the Stamp laws); Code de l'Expropriation par Cause d'Utilité Publique; Code des Frais, for regulating the official charges of courts of law; Code de la Garde Nationale; Code de l'Instruction Publique; Code Municipal et Départemental; Code des Officiers Ministériels (advocates, notaries, &c.); Code des Patentes; Code de la Pêche Fluviale; Code des Poids et Mesures; Code de la Police Médicale; Code de la Presse; Code de la Propriété Industrielle et Littéraire; Code Rural; Code des Tribunaux; Code de la Voirie (rivers, canals, highways, streets, and public vehicles).

The French code is retained in Rhenish Prussia; in the kingdom of Naples, with some few modifications; in the Canton of Geneva in Switzerland; and in Belgium. The commercial code and the registry of mortgages have been adopted all over Italy.

For comments and strictures by French jurists on the criminal laws of France, see Bérenger, *De la Justice Criminelle en France*, 1818; Dupin, *Observations sur plusieurs Points Importans de notre Législation Criminelle*; and Bavoux, *Leçons Préliminaires sur le Code Pénal*, 1821.

For a general view of the judiciary system of France, see Meyer, *Esprit des Institutions Judiciaires*, last vol.; and Rey, *Des Institutions Judiciaires de l'Angleterre comparées avec celles de France et de quelques autres Etats*, 1826.

CODICIL. [Will and Testament.]

CODIFICATION. [Law; Legislation.]

CODRUS, son of Melanthus, and the last king of Athens. When some of the Dorian states had united their forces for the invasion of Attica, they consulted the Delphic oracle concerning the issue of the expedition. The response implied that they would be victorious if the life of the Athenian king was spared. The Athenians being informed of this answer of the oracle, Codrus determined to devote himself for his country. Accordingly he went out at the gate disguised in a peasant's dress, and, falling in with two Dorians, killed one with his hook, and was himself killed by the other. The Athenians demanded and got back the body of their king; and the Dorians, despairing of success, withdrew their forces. The exact spot where Codrus was said to have fallen was shown in the time of Pausanias (i. 19), near the altar of the Muses, on the Ilissus. Codrus had several sons: the two eldest were Medon and Nileus. Cleomantis and his descendants were rewarded with the freedom of the city, and a perpetual right to sit at the public table, which was kept in the Prytaneum at Athens. (*Lycurgus against Leocrates*, sections 194 and 196; Pausanias, vii. 2.)

CO-EFFICIENT (in Algebra). When two or more numbers are multiplied together, each of them is called a factor of the product, and a co-efficient (or co-factor, as it were) of the other factor or factors. Thus the factors of the product $a \times b \times c$ are a, b, and c; and a is the co-efficient of $b \times c$, b of $a \times c$, and c of $a \times b$. The word is also frequently used in the sense of a numerical co-efficient; thus in $2x + 3y$, 2 and 3 are respectively the co-efficients of x and y.

COEHORN, MENNON, BARON DE, a celebrated Dutch engineer, was born in the year 1632. He commenced his military career at an early age, and spent the leisure which the intervals of active duty afforded in improving the art of fortifying places, with the view of diminishing the inequality which, by the inventions of his contemporary Vauban, began then to be felt in the means of attack and defence. He arrived at the rank of general of artillery, and was made director-general of fortifications and governor of Flanders.

At the siege of Namur in 1692, Coehorn gallantly defended the fort which he had before constructed for the purpose of strengthening the citadel of that place, but, being dangerously wounded, he was at length compelled to surrender. He was engaged at the attack of Trarbach, Limburg, Liége, and at that of the citadel of Namur, which three years before he had defended. In the year 1703 he was employed at the siege of Bonn, which, in three days, he compelled to surrender. Soon afterwards he forced the French lines at Hanuye, and was appointed with his army to keep in check the Marquis de Bedmar on the right bank of the Schelde. This was his last service: in the following year (1704) he died at the Hague, at the age of seventy-two.

In 1685 Coehorn published what are called his 'Three Systems of Fortification;' they are adapted to ground elevated only from three to five feet above the surface of water, and consequently they may be considered as applicable only to the towns of Holland.

COEHORN, a small mortar for throwing grenades, invented by the engineer of that name.

COELACA'NTHUS, a genus of fossil fishes, which occurs in the coal formation and the magnesian limestone of the north of England. (Agassiz.)

CŒLIUS, or rather CÆLIUS ANTI'PATER, LUCIUS, wrote a history of the second Punic War, in a work bearing the name of 'Annals,' and extending to at least seven books. The precise period of his birth or death cannot be fixed, but he is called by Cicero ('De Leg.,' i. ii.) the contemporary of C. Fannius Strabo, himself an historian, and we know that Fannius was with Scipio at Carthage in 146 B.C., and consul in 122. That Cælius lived about this period is confirmed incidently by an anecdote reported by Cicero ('De Divinat.,' i. 26.)

The historical writings of Cælius were highly valued by his countrymen in the time of Cicero, who assigns to him the credit of having surpassed his predecessors in historic composition by the dignity and eloquence of his style. But the more complete work of Livy threw all the historical works of his predecessors into oblivion. The fragments of Cælius are printed in an Appendix to Cort's and Havercamp's editions of Sallust. They have also been edited by Krause ('Vitæ et Fragmenta Veterum Historicorum Romanorum,' Berol., 1833). Cælius bears testimony to having seen a merchant who had sailed from Spain as far as Ethiopia, by which he probably meant the coast of Guinea. It is Cælius too who gives the most direct evidence in favour of Hannibal's route across the Alps having been by the Little St. Bernard.

The Greek name Antipater, attached as a cognomen to that of Cælius, has with some reason led to the belief that he or his father was of Greek origin, and, becoming a Roman prisoner and slave by the chance of war, was afterwards emancipated, and then took, as was the custom, the name of his Roman master.

COELLO, CLAUDIO, a Spanish painter, born at Madrid in the earlier half of the 17th century. He was placed under Francisco Rizi, from whose instructions, and by copying a few of the pictures of Titian, Rubens, and Vandyck, in the palace of Madrid, Coello became a very able painter, and produced several excellent altarpieces while still with Rizi. In 1680 he was appointed cabinet painter to that king in the place of Carreño, deceased, with a salary of twenty ducats per month.

In consequence of the death of Rizi, Coello was ordered by the king to paint the great altarpiece for the sacristy of the Escurial. The subject was the procession and ceremony of the Collocation of the Host on the Altar of the Sacristy, which took place in 1684, in the presence of Charles II. and his officers of state: the picture contains upwards of fifty portraits, and was completed by Coello in about three years, to the utmost satisfaction of the king. It is Coello's masterpiece, and one of the finest productions of the Spanish school, combining the design of Cano, the colouring of Murillo, and the effect of Velasquez. In Cumberland's opinion, Coello's style very much resembles that of Paul Veronese. Coello died in 1693.

There are several altarpieces and frescoes by Coello at Madrid, and some at Saragoza and other places.

(Cean Bermudez, *Diccionario Historico*, &c.; Cumberland, *Anecdotes of Eminent Painters in Spain.*)

COELN, WILHELM VON, or William of Cologne, a German painter, of the latter part of the fourteenth century, called also Meister Wilhelm. There are several documents which satisfactorily prove the existence of this painter, but there are no data by which any of his works can be identified. Many paintings in distemper of the old Cologne school are attributed to him, upon no other grounds than conjecture; but none but the best productions of that school are awarded to him.

The exact date of his birth is not known, but he was settled in Cologne, with his wife Jutta, as early as 1370. Of the works attributed to Meister Wilhelm, the following are the principal:—the picture over the tomb of Cuno von Falkenstein in the St. Castors-Kirche at Coblenz, painted in 1388; the large altarpiece of the church of St. Clara at Cologne, which is now in one of the chapels of the cathedral; it is in twenty-six compartments illustrating the life and passion of Christ; the Sancta Veronica, formerly in the Boisserée collection, but now belonging to the King of Bavaria, and in the Pinakothek at Munich, and of which there is a beautiful lithograph by Strixner; and a Crucifixion, and a half-length Madonna and infant

Christ, in the Wallraf Museum at Cologne. There are also in the Pinakothek at Munich (cabinet i.) four other pictures of various saints, mostly on gold grounds, besides the Sancta Veronica, attributed to this painter. They are all remarkable for richness of colour and extreme diligence of execution, in the heads in particular, which all have a true nobility of expression.

(Fiorillo, *Geschichte der Zeichnenden Künste in Deutschland*; &c.; Dillis, *Verzeichniss der Gemälde in der Königlichen Pinakothek zu München.*)

CŒLO'GENUS (F. Cuvier), *Cœlogenys* (Illiger), a genus of rodent Mammalia, destitute of clavicles, including two or perhaps three distinct species, termed Pacas, a corruption of the word *Paq* of the Brazilians, *Paig* of the natives of Paraguay, and *Pakiri* of some of the tribes of Guiana.

These animals are remarkable for a curious structural peculiarity in the skull, which imparts a singular aspect to their physiognomy, viz. an immense development of the zygomatic arch, forming an expansive shield of bone, almost entirely concealing the lower jaw; rough and convex externally, and deeply concave within. This broad projecting plate has its concavity lined by a continuation or reduplicature of the skin of the face, constituting a sort of pouch, with a narrow linear opening just below the angle of the mouth, from which the pouch leads directly upwards. The use of this is not known. Besides this curious sac, the Pacas have true cheek pouches in their usual situation, and of considerable extent.

Dental formula: Incisors $\frac{2}{2}$ Molars $\frac{4-4}{4-4} = 20$.

The molars present on their surface complicated riband-like lines of enamel set in the interior bony cement.

The Pacas are animals of considerable size, and of a heavy clumsy figure, having a thick muzzle, with the upper lip deeply cleft; a large inelegant head; prominent eyes; rounded ears; and stout limbs, of which the hinder pair exceed in length the anterior; but, as the greater portion of the tarsus rests on the ground, the body sinks even lower at the haunches than at the shoulders. The fore feet have five toes, of which the innermost is a mere rudiment seated high and furnished with a small claw; the hind feet have also five toes, but of these the outermost on each side is small and seated high. The three central are large, strong, and furnished with powerful hoof-like nails. The tail is wanting. The body is clothed with short stiff wiry hairs. Fred. Cuvier records two species, viz. *Cœlogenus subniger* and *C. fulvus*. Baron Cuvier treats them as mere varieties, but we have examined the skulls, and find them decidedly different.

These animals are natives of the whole of the eastern portion of South America, from Surinam to Paraguay. Forests in the vicinity of water, wooded marshes, and the borders of rivers are their favourite localities. They excavate superficial burrows, in which they dwell, and are much sought after by the hunter, their flesh being held in great estimation.

Though heavy and corpulent, the Pacas are very active, leap with address, and swim and dive with great facility. Their voice resembles the grunting of a young pig, and they are said to root in the ground with their nose. They feed on fruits and vegetables; are nocturnal in their habits; and the planter often rues the visits made by these midnight foragers to his sugar canes. The female is said to produce only a single young one at a birth.

The general colour of the Dusky Paca (*C. subniger*) is brownish black, with four lateral rows of white spots; sides of the lower jaw, throat, and chest, white. Total length of head and body, about 2 feet; average height, 14 inches.

COELOPTYCHIUM, a genus of Spongiadæ, proposed by Goldfuss, for some fossils of the chalk.

COENPTIO. [MARRIAGE, ROMAN.]

CŒNOBITES. [CONVENT.]

COETHEN, or KOETHEN. [ANHALT.]

COFFE'A, a cinchonaceous genus, consisting of many species of tropical berry-bearing shrubs, one of which, *Coffea Arabica*, is celebrated for the agreeable stimulating effect of an infusion of its roasted albumen. This substance, the coffee of commerce, is a secretion formed in the interior of the seed, and enveloping the embryo plant, for whose support it is destined when it first begins to germinate.

Coffea Arabica is an evergreen shrub, with oblong pulpy berries, which are at first of a bright red, but afterwards become purple. It is stated by Niebuhr to have been brought from Abyssinia to Yemen by the Arabs, from a country similar to their own plains and mountains. By that people it has for ages been cultivated in the hilly range of Jabal, in a healthy temperate climate, watered by frequent rains, and abounding in wells and water-tanks.

A combination of circumstances seems to favour the cultivation of coffee in Arabia, which can hardly be attained elsewhere. Frequent rains, and a pure and cloudless sky causing an almost uninterrupted flood of light, communicate an excessive stimulus to all the functions of vegetation, and are causes of the perfect elaboration of those delicate principles on which the aroma of the coffee is dependent.

The seed of *Coffea Arabica* consists of much horny albumen, and a peculiar principle or alkaloid, termed *cafeine*, which is identical with the active principle of tea, *theine*, as well as with *paraguaine*, the alkaloid of the Paraguay Tea. The seed is used in a raw state in medicine; but when roasted, both as a medicine, and still more extensively as an article of diet. The coffee-plant begins to produce fruit when two or two and a half years old; but the quality of the seeds from young stems is not so good as that from stems four or five years old. The size and colour of the bean (as the inner part of the seed is called) vary considerably, those from the West Indies being larger than those from the East. Much more depends upon the manner of roasting and making the coffee than upon the quality of the bean. The superiority of French coffee, in the preparation of which little or no Mocha coffee is used,

proves this position. The taste of raw coffee is somewhat sweetish; but the application of heat in the process of roasting produces important changes. The bean increases to nearly twice the original size, while it loses about a third of its weight: a powerful and agreeable odour is evolved, and a large quantity of empyreumatic oil, which appears in small drops on the surface, is formed along with a bitter principle, probably by an alteration in the cafeine and of the saccharine matter. The roasting should take place in a close revolving iron cylinder, over a clear but moderate fire, and should not be carried too far: when the beans have acquired a light chestnut colour, the roasting should be discontinued. The beans are then to be cooled quickly by being tossed up into the air, and the grinding, or rather rough pounding, should be performed in a covered mortar or mill. The drink should be prepared from it as soon as possible, by infusion, which is preferable, unless some apparatus be employed by which a kind of decoction is made in a close vessel. About half an ounce of coffee powder should be used for every eight ounces (half a pint) of water. In Britain the roasting is generally carried too far; and the subsequent parts of the process, instead of being performed immediately, are often postponed for days or even weeks, by which the aroma is dissipated: when made, the liquid is generally deficient in strength and clearness. The employment of white of egg or fish-skin to clarify is decidedly objectionable: clearness is thus purchased, but at the expense of the strength.

The addition of milk (which should always be hot) and of sugar heighten the nourishing qualities of this beverage, and in the morning render it a more substantial article for breakfast. When taken after dinner to promote digestion, it should be without milk, and, where the palate can be reconciled to it, without sugar.

The action of coffee on the human system is due chiefly to the alkaloid it contains, although its effects are considerably modified by the empyreumatic oil which is developed during roasting.

Coffee acts powerfully and peculiarly on the ganglionic system of nerves and their ramifications, and all the organs which are supplied by them. It elevates the vitality of these nerves, and quickens all their actions. The brain is likewise markedly acted upon by it; and hence the increased sensibility and greater energy of that organ during the use of coffee, and the removal of all sense of fatigue or disposition to sleep. Upon this depends, in addition to its local influence upon the organs of digestion, the utility of coffee in counteracting the effects of narcotic poisons, such as opium or belladonna, and the favour it has found among literary persons from enabling them to carry on their studies through the midnight hour without feeling oppressed by sleepiness. It excites the vascular system, and renders more powerful the contractions of all the muscles, both voluntary and involuntary. In warm climates it removes the languor which oppresses those who are exposed to the excessive heat, and helps the stomach to perform its office.

It is not without its counterbalancing disadvantages. For plethoric persons, and those who have a tendency to abdominal congestions, it is unsuited; and for persons subject to piles it is in general improper, as well as for females under certain states of their system. It is likewise hurtful to persons having a very excitable vascular system, being upon the whole more suitable for slender persons or those advanced in life, than for the young or very robust.

COFFEE TRADE. This great branch of commerce has been wholly created since the beginning of the eighteenth century. Nearly all the coffee which now comes to Europe is the produce of trees propagated from a single plant, which, having been raised from seed procured from Mocha in Arabia, by Van Hoorn, governor of Batavia, was sent by him to the botanical garden at Amsterdam, and the progeny of which was, in the year 1718, twenty years after its reception from Java, sent to Surinam.

In the year ending January 5, 1844, the coffee imported into Great Britain was—

From British Colonies, 23,235,102 lbs.
From Foreign Colonies, 27,142,813 lbs.

Of which was retained for home consumption

British . . . 20,792,859 lbs.
Foreign . . . 13,500,331 lbs.

Yielding a duty of

British at 4*d.* per lb.
Foreign at 6*d.* per lb. } £717,871.

The chief places of supply were Ceylon (16,000,000 lbs.); New Granada, Venezuela, and Ecuador (6,000,000 lbs.); Brazil (5,000,000 lbs.); Jamaica (5,000,000 lbs.); East Indies (5,000,000 lbs.); Chili (4,000,000 lbs.); Central America (3,000,000 lbs.); Java (2,000,000 lbs.). The coffee reexported was chiefly to Holland (7,000,000 lbs.); Belgium, (4,000,000 lbs.); Austrian Italy (2,000,000 lbs.); Hanseatic Towns (2,000,000 lbs.).

Chicory and other substitutes for coffee are prohibited in several countries; but in England chicory is becoming an important article in commerce. In 1840, the quantity of raw chicory retained for home consumption was 3932 cwts.; but by 1844 it had increased to 31,720 cwts.

The effect of rendering such a beverage as coffee cheap has been attended with beneficial moral effects. There are now from 600 to 700 coffee shops in London, at some of which from 700 to 800 persons a day are served at the charge of 1*d.* per cup; some where 1500 or 1600 persons are served at 1½*d*; and all these houses are supplied with newspapers and periodical publications for the use of persons who frequent them. A few years ago the working classes had no other place but the public-house to which they could resort for refreshment.

COFFERDAM (French, *Batardeau*), a wooden inclosure formed in a river, in order to obtain a firm and dry foundation for the piers of a bridge. It usually consists of a double wall of piles, with intervening space between the inner and outer wall filled with clay or chalk rammed down hard.

This done, the water is pumped out from the interior of the cofferdam.

COFFIN, the box or chest in which dead bodies are put into the ground, from the Latin *cophinus*, and that from the Greek κόφινος, which properly meant a wicker basket). Wyntown, in his 'Chronicle' uses *cofyne* for a shrine or box. The kistvaen, or coffin composed of rough stones, set edgewise at the sides and ends, and covered with one or more flat stones, was common among the Britons, and a few such are still seen in Wales. Stone coffins are frequently discovered in barrows which also contain Roman urns, proving their use in England at that period, and were in use for a long time afterwards. The bodies of the common people, not only in the Norman but also in the English æra, as we see in the illuminations of ancient missals, were only wrapped in cloth, and so put into the ground. Coffins both of lead and wood are of early use. The former occur in numerous instances through different centuries: and that the Saxons buried in coffins of wood, at least occasionally, we have the testimony of Bede. The forms and ornaments of various ancient coffins, mostly of stone, may be seen in the plates of illuminations in Strutt's 'Manners and Customs,' vol. i. pl. xxxix., xlv., lxvi., and in Gough's 'Sepulchral Monuments.'

COG. [WHEELS.]

COGNAC. [BRANDY; CHARENTE.]

COGNO'VIT is a plea, in an action at law, whereby the defendant acknowledges or confesses the justice of the plaintiff's demand against him (*cognovit actionem*). By this plea a trial is avoided, and judgment is entered up for the plaintiff. But, where the action is for damages, this judgment is not final, as the amount of damages remains to be assessed by a jury, under a writ of inquiry, which is executed by the sheriff, by the agency of his under-sheriff. When the jury have assessed the damages, the sheriff returns the inquisition, which is entered upon the roll in the form of a *postea*, and the judgment is then complete. If the action be for the recovery of a specific amount, as in an action of debt, the judgment entered up upon a plea of *cognovit actionem* is conclusive against the defendant, as it confesses the entire declaration. On this account it is a common practice for a debtor to strengthen the security of his creditor by executing a warrant of attorney to an attorney named by the creditor, authorising him to confess a judgment by a plea of cognovit in an action of debt to be brought by the creditor against the debtor for the specific sum due to him. But, in order to prevent fraud, it is provided by 1 & 2 Vict. c. 110, § 9, 10, that such warrant of attorney or cognovit is of no force unless there be present an attorney of one of the superior courts, on behalf of the party who gives it, expressly named by him, and attending, at his request, to inform him of the effect of the instrument before he executes it, and who must subscribe as a witness to the execution, and declare himself to be the attorney for the party. In order to make this process effectual as against the assignees of the debtor, if he should become bankrupt or insolvent, warrants of attorney and cognovits must be filed in the Court of Queen's Bench within twenty-one days after execution, or judgment must be signed or execution issued thereon within the same period.

(3 Geo. IV. c. 39; 6 Geo. IV. c. 16, § 108; 1 & 2 Vict. c. 110, § 60, 61; 6 & 7 Vict. c. 66. Stephen, *New Comm.*, vol. iii. p. 634.)

COHESION (*cohærere*, to hold together) means the common phenomenon of the adherence or coherence of particles of matter, by which they form collective masses, requiring the application of more or less force to separate the parts.

According to the notion commonly entertained of matter, it is composed of particles which are solid and in absolute contact. If the first supposition could be proved, there would arise the same necessity for inquiring into the nature of the force of *solidification* as at present exists for inquiring into the force of cohesion; and, in the event of the second being established, it might be required to show what is that force by which some of the particles of a body remain in contact with others when, by the application of an external force, these last are made to move. But we have no direct evidence that the particles of bodies are solid; and all evidence which is conclusive is contrary to the supposition that they are in contact with one another. In fact there is the highest degree of probability that the particles of bodies are separated from one another by intervals of much greater dimensions than those of the particles themselves.

Such being the case, we have to inquire—1, What is the force of cohesion?—2, What is the law of action by which the particles of bodies remain separate, and yet are prevented from separating indefinitely?

The gaseous, fluid, and solid states of matter show the most sensible effects of the variations produced by the action of heat in the forces existing between the particles of bodies. In the first state, the particles absolutely repel one another; in the second, a repulsive force is almost exactly counterbalanced by an attractive force, so that there results only that weak degree of cohesion which exists in fluids; while, in the third, the particles absolutely attract each other. Again, two plates of a solid material may be pressed together till the particles at their nearest surfaces are brought close enough to attract one another, so that the plates will remain in cohesion even in a vacuum; and they may be hammered together till the cohesion is as strong as if they had been naturally united. Yet the phenomena of heat, electricity, &c. afford apparently invincible arguments against the supposition of an absolute contact of the particles in any state of a body.

In the force of cohesion we have therefore indications of a real physical attraction [ATTRACTION]; and it follows that there must exist in the intervals between the particles of bodies a repulsive power, having its sphere of action interior to that of the cohesive force; from which we are led to conclude that the particles of bodies really act on one another at a distance.

It may seem that heat performs an important

part in producing the repulsion; but no supposition relating to caloric can be considered as affording the means of avoiding the conclusion just stated. If caloric be matter, we must explain its cohesion or repulsion before we can apply it to explain that of other matter. If caloric be not matter, nothing is gained in the way of avoiding the difficulty of the subject.

In the 'Penny Cyclopædia' (article 'Cohesion'), there is given a formula expressing the law of attractive or repulsive force between two equal particles of a body in terms of their distance from one another; which formula, when the distance is finite, may be made to coincide with the Newtonian law of attraction (a force inversely proportional to the distance); and, the distances being very small, it can be made to indicate forces positive or negative. Mathematical analysis is not yet however, as is there observed, sufficiently powerful to enable us to say whether such a formula could be made to give the numerical phenomena of cohesion.

The practical considerations connected with cohesive forces are treated of under STRENGTH OF MATERIALS.

COHESION, MAGNETIC. [MAGNET; MAGNETIC INTENSITY; MAGNETISM.]

COHORT (from the Greek word χόρτος) was a division of the Roman legion, corresponding nearly to a battalion in modern armies, but the number of men constituting its strength varied. The legion consisted of ten cohorts; each cohort contained three maniples; and each maniple two centuries: hence there were thirty maniples and sixty centuries; and in the whole legion there must have been sixty centurions. [LEGION.] The cohortes alares, or alariæ (Liv. x., 40, 43), were the troops of the auxiliaries and the allies which were stationed in the wings (alæ). The cohors prætoria was a select band which usually attended the prætor (Sallustius, 'Catil.' c. 60); Pitiscus, 'Lexicon Antiquit. Rom.,' in 'Cohors,' 'Centurio:')

COIMBATOOR, the capital of the district of Coimbatoor, in Hindustan, situated in 11° 2′ N. lat. and 77° 1′ E. long., is a well-built town, containing about 2000 houses, which are much fewer than it contained under the government of Hyder Ali. His son Tippoo sometimes resided at Coimbatoor. The town was taken by the English in 1783, but was restored at the peace in the following year. It was again taken by the English in 1790, and retaken by Tippoo's general, but was transferred with the district to the British government in 1799, and has since remained in their possession. The district, formerly a province, is now a portion of the Carnatic, and is included in the presidency of Madras.

COI'MBRA, a town and bishop's see in Portugal, in the province of Beyra, of which it is the capital, stands on the slope of a hill on the right bank and about 25 miles from the mouth of the Mondego, in 40° 12′ N. lat., 8° 25′ W. long., and has 15,000 inhabitants. A fine bridge connects the town with the large monastery of Santa Clara, situated among gardens upon a hill on the left bank of the Mondego. To the north-east rises the high ridge of Busaco, and on the west and south-west a fertile but marshy and unwholesome plain extends towards the sea. The town is old-fashioned, and most of the streets are narrow, ill-paved, and dirty. There are however several fine buildings, such as the palace of the university, once the residence of the kings of Portugal, and the various colleges connected with it, the cathedral, besides other churches and convents, and several squares adorned with fountains, which are supplied by a fine aqueduct adjoining the town.

The university has faculties of arts, theology, canon and civil law, and medicine. The lectures, which are gratuitous, begin in the autumn and last till May. The public examinations, which are held from May to July, are carried on through the medium of the Portuguese language, and are said to be very severe. The university is rich, and the emoluments of the professors are respectable. A Doctor's degree, which requires six years' attendance on lectures, is a necessary qualification for the higher stations in the church and magistracy. The library of the university occupies three large halls filled with books chiefly of ancient date. The library of the Benedictine convent is better both in number and choice, and contains works of more modern date. There is a royal college of arts, in which students are prepared for the university, a botanical garden, a museum of natural history, a chemical laboratory, and an observatory well furnished with instruments. The large monastery of Santa Cruz, in the lower part of the town, contains the monument of Affonso Henrique, the founder of the monarchy. The town is the centre of a considerable commerce in the produce of the country. [BEYRA.] It has a great number of charitable institutions and several potteries.

(Miñano, *Diccionario Geografico, y Suplemento.*)

COIN, metal stamped for currency. The etymology of the word is uncertain. Throughout the early part of Scripture, as well as through the poems of Homer, not a single passage occurs from which we can infer either the use or the existence of stamped money. Metals however, being close and compact in form, universal as to use, and admitting of division into larger and smaller parts, must soon have become the representatives of value. Herodotus (i. 94), speaking of the Lydians, says they were the first people on record who coined gold and silver into money, which only means the first people that he had heard of. The 'Parian Chronicle' ascribes the origin of coined money to the Æginetans, under Pheidon, king of Argos, 895 years before Christ. The best numismatic antiquaries agree in considering the coins of Ægina, from their archaic form and appearance, as the most ancient known. They are of silver, and bear on the upper side the figure of a turtle, and on the under an indented mark, as if the metal, at the time of striking, had been fixed upon a puncheon, and from the weight of the blow had received a deep cleft. In later coins of Ægina, the turtle has been changed to a tortoise, and the fissure on the other side converted into a device. The coins of Lydia probably come next in point of antiquity, and then the early Darics of the Persian kings, which occur both in

gold and silver, and bear a strong resemblance to the coins of Ægina in the mode of striking; these, if they are to be referred to Darius the First, must have been coined between B.C. 522 and 486. There are coins in gold of the early kings of Persia, similar in type to the silver Darics, and of very minute size.

The study of coins is not the province of the antiquary alone. Coins are among the most certain evidences of history. In the later part of the Greek series they illustrate the chronology of reigns. In the Roman series they fix the dates and succession of events. Gibbon observes that, if all our historians were lost, medals, inscriptions, and other monuments would be sufficient to record the travels of Hadrian. The reign of Probus might be written from his coins. In illustrating the history and chronology of sculpture and ancient marbles, coins enable the scholar and the artist not only to discern those peculiarities which characterise style, as it relates to different ages and schools, but to ascribe busts and statues to the persons whom they represent. The personation of the different provinces, too, forms another point of interest upon the Roman coins. Coins are frequently essential to the illustration of obscure passages in ancient writers, and preserve delineations of some of the most beautiful edifices of antiquity not existing now even in their ruins. As a branch of the fine arts, it may be sufficient to say that some of the medals of Sicily belong to a period when sculpture had attained its highest perfection. We would particularly refer to the coins of Syracuse. In every quality of art, too, the Roman coins, to a certain period, yield to the Greek alone. From Augustus to Hadrian the Roman mint was directed by excellent artists: and coins of admirable execution are found even down to the time of Postumus.

The generality of numismatic writers divide coins into Ancient and Modern; the Ancient, into the great divisions of Greek, Roman, and Barbarian. Modern coins are those which have been struck since the fall of the Western Empire.

On the Greek and Roman coins the best works are—Eckhel's 'Doctrina Numorum Veterum;' Rasche's 'Lexicon Universæ Rei Numariæ;' and Mionnet's 'Description de Médailles Antiques Grecques et Romaines;' the last work in 5 vols. 8vo., with 7 vols. of Supplement, Paris, 1806-35. For the Roman alone, the reader may consult A. Morel's 'Thesaurus Familiarum Romanarum,' 2 tom. fol., Amsterdam, 1734; and his 'Thesaurus Numismatum Imperatorum,' 3 tom., Amsterdam, 1752. Another, which brings the Roman series to the close of the empire, will be found in Banduri's 'Numismata Imperatorum Romanorum a Trajano Decio ad Palæologos Augustos,' 2 tom., Lut. Par., 1718, with Tanini's 'Supplement,' in 1 vol. fol., Rome, 1791. See also Mionnet's work; in 2 vols., 'De la Rareté et du Prix des Médailles Romaines,' 8vo., Paris, 1827. The prices of the different coins, fixed according to their rarity, in this work, are now the guide to the coin-dealers and collectors throughout Europe. To the English reader, Captain W. H. Smyth's 'Descriptive Catalogue of a Cabinet of Roman Imperial Large Brass Medals,' 4to., Bedford, 1834, and Akerman's 'Descriptive Catalogue of Rare and Unedited Roman Coins,' 2 vols. 8vo. London, 1834, will be useful. Pinkerton's 'Essay on Medals,' 2 vols. 8vo., 1789, with all its errors, is valuable.

Bayer's work, 'De Numis Hebræo-Samaritanis,' 4to., 1781; and his 'Numorum Hebræo-Samaritanorum Vindiciæ,' 4to., 1790, are valuable works upon the Jewish coins.

On English coins, the best works are—Leake's 'Historical Account of English Money,' 8vo., London, 1745; Snelling's various works; Folkes's 'Tables of English Coins,' as published by the Society of Antiquaries; and Ruding's 'Annals of the Coinage of Britain.' Simon has written an 'Essay towards an Historical Account of Irish Coins;' and Cardonnel his 'Numismata Scotiæ, or a Series of the Scottish Coinage.' On Anglo-Gallic coins, we have a quarto volume by Ducarel; a volume of similar size, 'A Description of the Anglo-Gallic Coins in the British Museum;' and 'Illustrations of the Anglo-French Coinage,' by Major-Gen. Ainslie, 4to., London, 1830, a very valuable publication.

On the French coinage, there are the works of Bouteroüe and Le Clerc; on the Papal coins, Foravante. Argelati and Zanetti have written on the coins of Italy; and Florez on those of Spain. For the coins of Germany, the reader may consult Madai's 'Thaler-Cabinet,' 4 vols., Königsberg, 1765-8; and Weise's 'Gulden Cabinet,' 2 tom., Nürnberg, 1780-2. For Danish coins, the 'Danske Mynter og Medailler,' 3 vols., fol., Copenhagen, 1791-4. On Bulgarian coins, Fraehn's work, 4to., Casan, 1816. For Oriental coins, Marsden's 'Numismata Orientalia Illustrata,' 2 vols., 4to., London, 1823-5.

COINING. [MINT.]

COINING. The numerous and complicated laws upon this subject, passed from time to time during several centuries, were repealed by the Stat. 2 Will. IV. c. 34. The making or coining of money being one of the prerogatives of the crown, the counterfeiting of the king's coin was in early periods of English history considered to be a usurpation upon the royal authority, and upon that principle constituted the offence of high treason. The Statute 2 Will. IV. c. 34, s. 3, contains all the provisions with respect to the offence of making or counterfeiting any gold, silver, or copper coin, uttering false coin, or having coining tools in a man's possession, and making and mending such tools.

COIRE. [GRAUBÜNDTEN.]

COIRE, the fibres of the cocoa-nut. The rind of the nut is soaked in water for several months, then beaten upon a stone with a piece of heavy wood, and afterwards rubbed with the hand until the intermediate substance is completely separated from the fibrous portion. The rind of forty average nuts supplies about six pounds' weight of the fibre. This fibre constitutes the coire, which is then ready for use in the same way as hemp or other fibrous materials, for cordage, matting, canvas, &c. Besides the actual weaving or plaiting of this material into textile fabrics of a coarse kind, it is used as a stuffing for mattresses, pil-

lows, and cushions. The availability of coire for such a purpose seems to depend upon these qualities:—that the coire is very indestructible; that it does not harbour vermin, as horse-hair would in a warm climate; and that it is free from offensive smell.

COKAINE, or COKAYN, SIR ASTON, was born in 1608, at the country seat of his father, a Derbyshire esquire of old lineage and considerable property. He was a Roman Catholic and a royalist; and both of these characters exposed him to much suffering in the civil war. In the latter part of his life he was obliged to part with his estates, reserving a small annuity for his support. He died at Derby, in 1684. He published four plays, which, with other poems, were collected, in 1669, in two volumes, small 8vo., now very rare. The plays and the poems are equally worthless; but Sir Aston deserves some notice for his close intimacy with the dramatic poets of his time, and for the information furnished, in regard to the history of the drama, by those commendatory verses which make up a large proportion of his compositions.

COKE is coal divested of its gaseous and more volatile constituents by partial combustion in close chambers, or in heaps from which the free access of air is excluded. The simplest mode of coking coal, which is still occasionally followed, is to lay the coal in large flattened heaps, often containing thirty or forty tons each, in the open air, covering it with ashes and earth to confine the heat, so that the mass of coal may be slowly burnt in a smothered manner, men being employed during the process to renew the covering wherever the fire may begin to burn through too fiercely. But the best mode of making coke is by means of ovens. These are of different forms; but in principle they consist of an inclosed chamber, in which the coal is burned without access of air: the volatile ingredients are driven off, but the carbon remains. Coke is also made, in the process of making gas, in all gas-works, the coal which is put into the cylinders to make the gas being removed as coke after the volatile matter has been carried off to the gasometer. Coke is much preferable to coal where pure fuel is required in many smelting operations, and where smoke is wished to be avoided. An immense quantity is now used for locomotives; and the principal railway companies have established coke-ovens at their depôts. From a given quantity of coal, the produce of coke is about 20 per cent. less in respect to weight, but 20 per cent. more in respect to bulk.

COKE, EDWARD*, was born at Mileham, in the county of Norfolk, on the 1st of February, 1551-2. He was the only son of Robert Coke, of Mileham. His father, who was a bencher of Lincoln's Inn, London, died in the year 1561. Before that event he had been sent to the Free Grammar School at Norwich. In September 1567, he was admitted a fellow commoner of Trinity College, Cambridge. After having spent three years at the University, he went to London to commence his legal education. On the 20th of April, 1578, he was called to the bar. During his studies in the Inner Temple, he is said to have greatly distinguished himself in the exercises called Mootings and Readings, which constituted a necessary part of the education of an advocate in former times.

In the course of the year after his call to the bar, the society of the Inner Temple appointed him Reader at Lyon's Inn; and the intelligence and learning displayed by him, in the conduct of the exercises at which he presided in this capacity, gained him a high reputation as a lawyer, and opened the way to extensive practice at the bar. In the next term after he was called to the bar, he argued Lord Cromwell's Case, which he says, in his own report of it (4 Rep. 146), 'was the first cause that he moved in the King's Bench.' About three years afterwards he was associated with Popham, the solicitor-general, in arguing before the chancellor and the twelve judges in the case of Edward Shelley, where the important rule, called the 'Rule in Shelley's Case,' was laid down so distinctly that it has taken its name from this case, though the rule itself is of higher antiquity. From that period until he became solicitor-general, his practice was enormous. In 1586 he was chosen recorder of Norwich; and a few years afterwards he was called to the bench of the Inner Temple. In June 1592, he was appointed solicitor-general. In the same summer he became Reader of the Inner Temple, and delivered several readings on the Statute of Uses to a large audience. In March 1594, he was appointed attorney-general, and, as the office of solicitor continued vacant until the close of the following year, the duties and labours of both offices during that interval devolved upon him.

At this period originated the animosity between Coke and Bacon, which prevailed with little intermission during the life of the latter. As soon as the office of attorney-general became vacant, upon the removal of Sir Thomas Egerton to the seals, the Earl of Essex used his most strenuous efforts to induce the queen to bestow that place upon Bacon, instead of promoting Sir Edward Coke from the inferior office of solicitor-general. The letters of Bacon to Essex and others, with relation to this intrigue, abound with sarcastic and contemptuous expressions respecting Coke, whose high reputation and great experience made him a fitter man for the office than his rival, whose practice at the bar was never extensive, and who was then scarcely known in the courts.

The state services imposed upon the attorney-general at the end of Elizabeth's reign were extremely laborious. The severity of the laws re-

* Many of the dates and incidents in this sketch of Sir E. Coke's life are taken from some characteristic memoranda in his own hand-writing prefixed to a volume of Notes among the Harleian MSS. in the British Museum, No. 6687. This was probably the book which Lloyd mentions in his 'State Worthies' as 'a manual which Coke called *vade mecum*, from whence at one view he took a prospect of his past life, having noted therein most remarkables.' Roger Coke, in his 'Detection of the Reign of King Charles,' says, 'that when Sir E. Coke was on his death-bed, a king's messenger seized all his books and papers, and among them his Comment on Littleton, and the History of his Life before it, written with his own hand.' These notices seem to describe the identical book which has now found its way into the British Museum. These notes have not been referred to by any of Coke's numerous biographers.

cently enacted against Roman Catholics had occasioned a succession of plots by foreign adventurers against the person of the queen, the investigation of which was of course committed to the attorney-general. The business of constant examination at the Tower, added to his Star Chamber duties and his practice in the common-law courts, must have imposed a weight of labour and responsibility upon Coke which no mind of common activity and energy could have undergone. Whole volumes of examinations in these cases, taken by himself and written with his own hand, are still preserved at the State Paper Office. In February 1593, Coke, being at that time solicitor-general, was elected a member of parliament for his native county of Norfolk. At the meeting of this parliament he was chosen speaker of the House of Commons.

In the year 1582 Coke married the daughter and heiress of John Paston, Esq., of Huntingfield, in Suffolk, through whom he became connected with several families of great opulence and importance, and with whom he received a fortune of 30,000*l*. By this lady he had ten children. She died in June 1598. In the month of November in the same year Coke married the widow of Sir William Hatton, daughter of Thomas, Lord Burleigh, and grand-daughter of the lord high treasurer, which, though an advantageous alliance in point of connection and property, was by no means a source of domestic happiness.

Sir Edward Coke held the office of attorney-general until the death of Queen Elizabeth, and, having always been favourable to the title of James I., co-operated cordially with Cecil and the other members of the late queen's council in making arrangements for the peaceable accession of the king of Scotland to the crown. James, upon his arrival in London, received him into his full confidence and favour, and continued him in his office of attorney-general.

Coke's sound judgment and extensive legal knowledge, united with his fervent attachment to Protestantism, rendered him a valuable officer of the crown in the various proceedings against the Roman Catholics at the close of Elizabeth's reign, and the beginning of that of James I. In the examinations respecting the several assassination-treasons, which have been already mentioned, as well as that of Squire in 1598, of the Raleigh conspiracy in 1603, of the Gunpowder Plot in 1605, and of numerous other treasonable and seditious movements imputed to the Catholics during the period that he filled the office of attorney-general, he engaged with great zeal and ardour; and the temper displayed in his speeches and general conduct on the several trials is much more that of a religious partisan than of a legal advocate.

With the trials of the conspirators in the Gunpowder Plot in 1606, the career of Sir Edward Coke as an advocate closed. In the month of June in that year he was made chief justice of the Common Pleas. He retained the situation upwards of seven years; and, in the discharge of the judicial duties at this period, his profound learning and unwearied industry procured him the highest reputation. In several important constitutional questions which occurred while he was chief justice of the Common Pleas, he resolutely opposed the views of the king, especially in the conflicts between the ecclesiastical jurisdictions and the courts of common law, and in his resistance to the encroachment of prerogative on the subject of royal proclamations he displayed great integrity and independence. With a view to corrupt his uncompromising disposition, his crafty rival, Bacon, who was then solicitor-general, suggested his promotion to the chief-justiceship of the King's Bench; and accordingly he received his patent for that office in October 1613, and a few days afterwards, in consequence of a special order from the king, took his seat at the board as a privy councillor. In the following year he was elected high steward of the University of Cambridge.

The project of making the chief justice 'turn obsequious' by his advancement, which was expressly avowed by Bacon, altogether failed. In the case of Peacham, who was prosecuted for treason in the year 1615, for having in his possession a sermon supposed to contain sedition, written by him, but never preached or published, Coke, after long hesitation to deliver what he quaintly called an 'auricular opinion,' seems at last to have declared that the offence was not treason. His exertions in the prosecution of the murderers of Sir Thomas Overbury in the same year, though praised by Bacon in conducting the case as attorney-general, gave displeasure to the king; and his independent conduct in the case of Commendams, which occurred in 1616, finally determined the court to remove him from his office. Accordingly on the 26th of June, 1616, he was summoned before the council, and charged with several frivolous accusations, some of them founded upon alleged malversations while he was attorney-general, to all of which he returned distinct answers. Four days afterwards he was again summoned to appear before the council; upon which occasion he was reprimanded, sequestered from the council-table during the king's pleasure, enjoined not to ride the summer circuit as judge of assize, and ordered to employ his leisure in revising many 'extravagant and exorbitant opinions' set down in his Book of Reports. In November 1616, he received his writ of discharge from the office of chief justice, and was succeeded by Sir Henry Montague, who was warned by the Lord-chancellor Egerton 'to avoid the faults of his predecessor, who had been removed for his excessive popularity.'

In September 1617, he was reinstated a member of the privy council, and in July 1618 he was appointed 'a commissioner for the exercising the office of lord high treasurer of England,' jointly with Archbishop Abbot, Lord-chancellor Bacon, and several others. In the parliament which assembled in 1620, he was returned for Liskeard in Cornwall. In this parliament he distinguished himself as one of the most able and zealous advocates of the liberal measures which were proposed; he became a strenuous opponent of the monopolies by which the freedom of trade was fettered, and took an animated part in that

struggle between the prerogative pretensions of James and the freedom of debate, which ended in the resolution of the Commons, 'that the liberties, franchises, privileges, and jurisdictions of parliament are the ancient and undoubted birthright and inheritance of the subjects of England.' His adherence to the popular or *country* party gave great offence to the court, and he was accused of various offences and malpractices. The king, at this period, was so incensed against him, that before he would grant his warrant for a general pardon, at the end of 1621, he commanded the privy council to consult upon the means of excepting Sir Edward Coke from the benefit of it; and on the 27th of December that year Coke was arrested and committed to the Tower, where he remained a close prisoner until the 6th of August, 1622. Upon his release from the Tower, he was ordered to confine himself to his house at Stoke Pogis, and not to repair to the court without express licence from the king. He was never again restored to the council-board.

In the first parliament of Charles I., called in April 1625, Coke was again returned as one of the knights of the shire for the county of Norfolk. At the commencement of this parliament he adopted a moderate tone. He dissuaded the house from insisting upon grievances, and urged conciliatory measures. But this disposition to peace was overcome by the determined tendency of the crown to arbitrary measures; and the king, being unable to obtain any answer to his demand of a subsidy, except repeated remonstrances against grievances, abruptly dissolved the parliament. He was compelled however, by his pecuniary wants, to assemble a new parliament in the course of the same year, having previously appointed Sir Edward Coke and three other popular leaders sheriffs of counties, in order to prevent their serving as members. Coke, having been in this manner named Sheriff of Buckinghamshire, was again returned as knight of the shire for Norfolk; and though, in consequence of his shrievalty, he did not take his seat in that parliament, no new writ was issued to supply his place, and it was considered that he was *de facto* a member of the house. On occasion of the third parliament summoned by Charles I., in March 1628, Sir Edward Coke was returned for two counties, Buckingham and Suffolk; but he tells us that 'he chose the former, because he resided there, and because his election for that county took place first.' In this parliament, though now in his 79th year, he defended the constitutional rights of the people of England with all the energy of youth and all the sagacity of age. By his advice, and with his active co-operation and assistance, the Bill of Rights was framed; and by his perseverance and reasoning the lords were, after many conferences, induced to concur in the measure, which, after many ineffectual attempts at evasion, was reluctantly assented to by the king. At the close of the session of parliament in March 1629, he retired to his estate at Stoke Pogis, in Buckinghamshire. The last years of his life are said to have been occupied by the revision of his numerous works.

He died on the 3rd of September, 1633, and was buried in the family burying-place of the Coke family in the church of Titeshall, in Norfolk.

The most celebrated of Sir Edward Coke's works is the treatise commonly known by the name of 'Coke upon Littleton, or the First Institute.' It consists of a minute and laborious commentary upon the text of Littleton's 'Tenures,' and contains almost the whole of the common law as it existed in his time. The 'Second Institute' contains notes on several ancient statutes; the 'Third Institute' is a treatise on criminal law; and the 'Fourth Institute' treats of the origin and jurisdiction of different courts. Coke also wrote a treatise on copyholds, entitled 'The Complete Copyholder,' and a 'Reading on Fines.' He also published a collection of Reports, which are still of great value. Sir Francis Bacon ascribes to the Reports the merit of having preserved the vessel of the common law in a steady and consistent course. 'For the law,' says he, 'by this time had been like a ship without ballast, for that the cases of modern experience are fled from those that are adjudged and ruled in former time.'

COKE, THOMAS WILLIAM. [LEICESTER, EARL OF.]

COL, from the Latin *collis*, a hill, is a name given in French and Italian, to such a depression in a mountain however high as affords a natural road or pass. The term is principally confined to the passes of the Alps and the Apennines. [ALPS.] In some parts of Italy the term applied to these passes is *bocca* or *foce*. In the Pyrenees such passes are called *ports*, probably from *porta*, 'gate.'

COLAPOOR, a small independent Mahratta state, situated within the province of Bejapoor, in the region of the Western Ghaut Mountains. [BEJAPOOR.] The territory of the raja of Colapoor is so intermixed with that of the British and of other Mahratta chiefs in its vicinity, that it would be difficult to describe its boundaries. The area of the state has been estimated at about 3000 square miles. Colapoor was founded by Sumbajee, the grandson of Sevajee. In 1731 a treaty was concluded between the Peishwa and Sumbajee, by which it was agreed that the lands of the province lying north of the Kistna should belong to the Peishwa, that all between the Kistna and Warna and the Toombuddra should belong to Sumbajee, and that all conquests south of the Toombuddra should be divided equally between them. The territory thus assigned to the raja of Colapoor was then partly in the actual possession of the Moguls, and partly of other chiefs who had set up for themselves. It was not until the subsequent reign of Madhoo Rao, about the year 1762, that the whole was effectually brought under the raja's power. In 1821 the raja was privately assassinated in his palace, and was succeeded by a son of immature age, during whose long minority the country fell into a state of great disorder. In 1825, 1826, and 1827, the raja having committed aggressions in the territories of some Mahratta Jagheerdars under the protection of the British, his territory was occupied by our troops, and the powers of government were temporarily placed in the hands of a minister appointed by the Governor of Bombay. In each of the years just mentioned

a treaty was concluded with the raja, by which he bound himself to desist from acts of aggression; but, these treaties having been broken, in 1829 a definitive treaty restricted him from keeping up a greater force than from 400 to 800 foot soldiers: some districts in which he had committed oppressions against the Zemindars were at this time taken from him; British garrisons were placed in the capital and in the fortress of Punnalaghur, at the raja's expense, and a chief minister for the future management of his government was to be permanently appointed by the British government.

COLAPOOR, the capital of the state of Colapoor, is situated in 16° 40′ N. lat., and 74° 17′ E. long., in a valley between a curved range of hills, by which it is protected on three sides, the fourth side being protected by two hill-forts about ten miles north-west from the town. These forts stand upon rocks which are about 300 feet above the level of the valley, and which present natural perpendicular ramparts of basalt, from thirty to sixty feet high. The two forts are connected together; one of them, called Punnalaghur, covers a space three and a half miles in circumference, in which area are several dwellings, lofty trees, gardens, and fine tanks. The town is 130 miles S. by E. from Poona.

COLBERG. [POMERANIA.]

COLBE'RT, JEAN BAPTISTE, born in 1619, at Rheims, was brought up to business. He was first employed at Lyon, in a commercial house, and afterwards went to Paris, where he was introduced, about 1648, to Mazarin, who appointed him his executor on his death-bed in 1661, and recommended him to the king as a man deserving all his confidence. Louis XIV. appointed Colbert contrôleur général des finances, and Colbert advised the king to form a chamber of justice for the liquidation of the debts of the state. The finances were in a ruinous condition; out of 84,000,000 livres which the people paid, the treasury received only 32,000,000. The farmers of the revenue were called to a severe account, and he reduced the debts of the state by an arbitrary composition, which was, in fact, a real bankruptcy. Having got rid of the burdens, he next applied himself to simplify and improve the collection of the revenue. By these means, at his death in 1683, the regular revenue of France was 116,000,000 of livres, of which 23,000,000 were absorbed by the charges of collection and administration, and the rentes or annuities due by the state, leaving 92,000,000 of net receipt, instead of 32,000,000, which he had found when he entered on office twenty-two years before. (Lemontey, 'Pièces Justificatives.') But one-half only of this increase was obtained through additional taxation; the other half was the result of better order and economy. But the extravagance of Louis and his court counteracted the efforts of Colbert, and in the latter years of his administration Colbert was obliged to have recourse to ruinous loans, an increase of the oppressive tailles, the sale of offices and honours, and other extraordinary or war expedients.

Colbert's most strenuous and effective efforts were directed to the encouragement of commerce and manufactures. He is accused of having sacrificed agriculture to manufactures, but in fact his principles were erroneous with regard to both. But, whatever may be thought of Colbert's measures, he certainly succeeded in giving a great impulse to French industry; he roused and directed the national mind towards a new and useful exercise of its faculties. Woollens, silks, glass, pottery, leather, and iron manufactures were either created by him, or greatly enlarged and improved. He founded Quebec and Cayenne, made new settlements in India and on the coast of Africa, and favoured the colonies of Martinique and St. Domingo. He effected many other improvements. He also greatly increased the French navy.

Colbert caused the first statistical tables of the population to be made out, and he collected the old charters and historical records of the kingdom. He removed the king's library from the miserable premises in the Rue de la Harpe, placed it in two houses near his own hotel, and increased it from 16,000 to 40,000 volumes. He instituted a commission of legislation, which framed the various ordonnances of civil and criminal process, of commerce, of the woods and forests, and of marine, published in 1670 and the following years, and which, with all their imperfections, constituted the first code of laws for France, and from which the various legislative commissions appointed by Napoleon drew most of their materials. [CODES, LES CINQ.]

He purchased the office of superintendent of the public buildings in 1664. The gardens of the Tuileries, the Hôtel des Invalides, the façade of the Louvre, the triumphal arches of St. Denis and St. Martin, the Boulevards, and some of the quays along the Seine were erected under him. He also began the structure of Versailles; but the king's passion for building, thus stimulated, went far beyond Colbert's intentions, and vast treasures were sunk in a gorgeous and useless work. Colbert instituted the Academy of Sciences, and those of Inscriptions and of Architecture. He reformed the Academy of Painting, and established the school at Rome for French artists. He transferred the Académie Française to the Louvre, and became one of its members. At last, seeing his rival Louvois enjoying the ascendancy over the king's mind, and disappointed in his plans, he fell ill, and died, 6th September, 1683.

(*Notice sur Jean Baptiste Colbert* in the *Œuvres de Lemontey*, vol. v., *Pièces Justificatives*, Paris, 1829; *Mémoires de Charles Perrault*, Colbert's secretary; and *Particularités sur les Ministres des Finances*, par Montyon)

COLCHESTER, a market town, municipal borough, and parliamentary borough, in the county of Essex, is situated on the northern declivity of a hill, which rises from the southern bank of the Colne, about 9 miles from the sea, and 51 miles N.E. by E. from London. The Colne is navigable for vessels of 200 tons' burthen to the Hythe, which is about two miles from the town by the course of the river, but less than a mile in a straight line westward. There are three bridges over the river, two of which connect the town

with the suburbs. The population in 1841, within the limits of the municipal borough and liberties, which are coincident with the limits of the parliamentary borough, was 17,790. These limits include 16 parishes, of which 12 are within the boundary of the town.

The streets are generally wide, well paved, lighted with gas, and the town is well supplied with water. The principal public buildings are—the Moot-Hall, an ancient structure, in the upper part of which the corporation-business is transacted, and the lower part of which is used as the borough gaol; a large market-house; a theatre; the Essex and Colchester General Hospital; the ancient castle, part of which is used as the county prison; the union-workhouse. Besides the parish churches, some of which are very ancient, there are several places of worship for dissenters; a free grammar-school, with generally from 30 to 40 scholars on the foundation; a national school; Lancastrian school; two charity schools; numerous other schools; and several almshouses.

The parliamentary borough returns two members to the House of Commons. The municipal borough is divided into 8 wards, and is governed by 6 aldermen and 18 councillors.

Colchester is probably on the site of the *Camalodunum* of the Romans, which was burnt in the insurrection under Boadicea. Great quantities of Roman antiquities have been found. The town was fortified by Edward the Elder. Of later times, besides the remains of the castle, the keep of which is in good preservation, with walls of extraordinary strength and thickness, there are some interesting ruins of St. John's Abbey and St. Botolph's Priory.

COLCHESTER, CHARLES ABBOT, LORD, was the younger son of the Rev. John Abbot, rector of All Saints, Colchester, and was born at Abingdon, Oct. 14, 1757. He was educated at Westminster School, and elected a student of Christ Church, Oxford, in 1775. Having chosen the law for a profession, he was called to the bar; and in 1795 he published a work on 'The Jurisdiction and Practice of the Court of Great Sessions in Wales, upon the Chester Circuit,' in which he advocated the abolition of the separate Welsh judicature, a reform subsequently effected. In this year he retired from the bar on being appointed clerk of the rules in the court of King's Bench, and became also member of parliament for the borough of Helston. In the House of Commons he distinguished himself by his activity and general talent for business; and on the motion of Mr. Pitt, of whose policy he was a supporter, he was appointed chairman of the finance committee in 1797. On the retirement of Mr. Pitt from the ministry in 1801, Mr. Abbot became, under the administration of Mr. Addington, chief secretary for Ireland; and in Feb. 1802 he was elected speaker of the House of Commons. He filled this office with attention, correctness, and efficiency, and was particularly distinguished for the dignified manner and well-selected terms in which he delivered the thanks of the house to the various officers for services rendered during the war. In May 1817, an attack of erysipelas compelled him to resign. He was thereupon created Lord Colchester, with a pension of 4000*l.* a year. Lord Colchester took part but rarely in the debates of the House of Lords. He died May 8, 1829. The year before his death he published his 'Speeches (six) upon the Roman Catholic Claims, delivered in the House of Commons, and in the House of Peers;' having lived just long enough to see the measure carried which he had always opposed.

COLCHICUM. [MELANTHACEÆ.]

CO'LCHICUM AUTUMNA'LE, or *Meadow Saffron*, is a plant with a solid rootstock or cormus found wild in various parts of Europe and in Great Britain, forming a gay carpet in the autumn in the fields, where its lively purple crocus-like flowers spring up. Its corms and its seeds abound in an acrid, stimulating, deleterious principle, which has been carefully examined by modern chemists, and forms an important plant in the Materia Medica, large quantities of both corms and seeds being annually consumed in the manufacture of Eau Médicinale and other medicinal preparations. Its corm is irregularly egg-shaped, and covered with a dry, brittle, brown skin; at its base it bears a bud, which feeds upon the parent stock, exhausting and finally replacing it every year. Its flowers are large pale purple, and spring up in the autumn without leaves, forcing themselves readily through the soil, and expanding with their orifice, together with the anthers and stigmas, just above the surface of the soil, while the tubular part, with the ovary and filaments, remains enveloped in a membranous sheathing spathe below the soil. Each stock produces six or eight of these flowers. The stamens are six, the ovaries three, each with a long thread-shaped style, and not adhering in any degree to the tube of the flower. These are succeeded by three little follicles, which slightly adhere to one another by their inner edge, and in the spring are elevated above the soil by their lengthened footstalk. At this time too the foliage makes its appearance in the form of an erect tuft of broad, oblong, shining, sheathing leaves. Each follicle contains several oblong seeds.

For medical purposes the corms of colchicum should be collected at Midsummer, and they should be used immediately; for at that time the peculiar principles which they contain are in the greatest state of concentration. If they are employed at a time when the plant is in a state of growth, there is no certainty as to the quantity of colchica that a given weight of the corms will yield.

The corms and seeds are both frequently employed in Britain for medicinal purposes. The corms are found at various depths under ground; when very deep, they are not so good, being the produce of old exhausted plants. Each corm is about the size of a hazel-nut or walnut, ovate or heart-shaped, consisting of a white fleshy succulent substance, which, when cut across, exhibits roundish plates. The recent cormus has a nauseous radish-like odour; when dried, no odour; the taste is sweetish bitter, leaving an acrid sensation in the throat.

The seeds, which should be collected in May, are small, globose, about the size of a grain of

millet, of an obscure fawn colour, opaque, rough, and wrinkled, with a white hilum at the base, very hard, tough, and difficult to reduce to powder.

Colchicum acts as a diuretic and purgative, and when given in large doses is poisonous. In acting upon the kidneys it increases the quantity of lithic acid in the urine, and hence is explained its use in gout and rheumatism.

The diseases in which colchicum is most useful are—dropsy, when a small dose is prescribed; gout, in which larger doses are used; and rheumatism, in which its beneficial influence is first felt on the liver, and afterwards on the kidneys, from which a larger portion of uric acid is excreted, and the formation of gout-stones (urate of soda) in some degree prevented. As acid in the stomach renders the action of colchicum more violent, magnesia is usually given with it. The acetate and acetous extract are the best forms for administration.

COLCHIS, a country of Asia, extending along the eastern shore of the Euxine Sea, from the town of Trapezus. It was bounded on the north by the Caucasus, on the south by Armenia, on the east by Iberia, and on the west by the Euxine. The modern Mingrelia includes only part of this country. The name Colchis appears in the early legends of the Greeks as connected with the expedition of the Argonauts. [ARGONAUTS.]

The chief river of Colchis was the Phasis, which flows into the Euxine Sea. Among the most important cities were Pityus, the great mart of the district, Phasis, on the river of the same name, Aea on the Phasis, and Cela. Colchis was a very fertile district, and abounded in timber which was well adapted for ship-building, in various kinds of fruits, and in flax. The inhabitants were famed for their linen manufactures, which formed a considerable article of export. The country is rich in silver and gold mines, some of which are said to be worked with profit at this day. The pheasant (*Phasiana avis*) derives its name from its native place, the banks of the Phasis.

COLD. *[CATARRH; HEAT.]

COLDEN, CADWALLADER, lieutenant-governor of New York before the Revolution, was the author of numerous works, on subjects in medicine, natural philosophy, and botany. His father was minister of Dunse in Scotland, where he was born in 1688. He received his medical education at the university of Edinburgh, and in 1708 he emigrated to Pennsylvania, where for several years he practised as a physican. After visiting England, and having established a reputation by 'Remarks on Animal Secretions,' he returned to Pennsylvania, and settled finally, in 1718, in New York. His principal works are—'A History of the Five Indian Nations,' 'An Essay on the Cause and Remedy of the Yellow Fever, so fatal at New York in 1743.' His favourite study was botany. The 'Acta Upsaliensia' (for 1743-4, 'Plantæ Novæboracenses') contain his descriptions of several hundred American plants, of which 200 were new species. He died at his seat on Long Island, at the age of eighty-nine. (*Biographie Universelle; Encyclop. American.*)

COLE, *Colza*, a cultivated state of the *Brassica napus*, which does not form a close head, like cabbage, but has sessile heart-shaped leaves. It is cultivated for its seeds, from which an oil is expressed, which is much used for burning in lamps, and in the manufacture of leather and soap.

It requires a good loamy soil, well manured, to produce a good crop of cole-seed. In rich land lately broken up from pasture, or fenny land newly drained, it grows luxuriantly, and gives a great return. It is thought to be a great exhauster of the soil. In a rotation, cole is considered as a good crop to precede wheat. Like rape, which is another variety, it is sometimes sown to be fed off by cattle and sheep on land which is not so well adapted to the growth of turnips.

COLEBROOKE, HENRY THOMAS, was the third son of Sir George Colebrooke, Bart., and was born in 1765. He was educated at home by a private tutor. In his twelfth year he was sent to France, where he remained till he was sixteen. His father was one of the Directors of the East India Company, and in 1782 he was appointed to a writership in India. For the first three years after he went out he resided at Calcutta, and was attached to the Board of Accounts; he was then transferred to the revenue department of Tirhoot. In 1789 he was removed to Purneah; and, having been soon after appointed a member of a commission deputed by the government to investigate the resources of Bengal, he drew up, in conjunction with Mr. Lambert, a merchant of Calcutta, and printed for private circulation, in 1794, a very able tract, entitled 'Remarks on the Agriculture and Commerce of Bengal, by a Civil Servant of the Company,' in which he recommended a free trade between India and England. Some time before this Mr. Colebrooke had begun to study the Sanscrit; and, having now undertaken the translation of the collection or digest of Hindoo law formed under the superintendence of Sir William Jones, he had finished his task before the close of the year 1796; and the work was published, under the title of 'A Digest of Hindoo Law on Contracts and Successions, from the Original Sanscrit,' in 3 vols. 8vo., at Calcutta, in 1797. Soon after the foundation of the College of Fort William, he was appointed to the Professorship of the Sanscrit Language. He was subsequently promoted to be Chief Judge of the courts of Sudder Dewannee Adawlut and Nizamut Adawlut; and he was for a time President of the Board of Revenue, and a member of the Supreme Council of Bengal. He was also for some years a Director of the Asiatic Society of Bengal; and many of the most valuable papers in their Transactions (the 'Asiatic Researches') were contributed by him. To the Transactions of the Royal Asiatic Society of Great Britain, after his return to his native country, he contributed various papers. He was also an occasional writer in the Asiatic Journal. He likewise published the following separate works:—'A Collection of Compositions in Sanscrit, for the use of the Students of the College of Fort William, including the Hitopadesa [BIDPAI], with Introductory Remarks,' 4to., Calcutta, 1804; 'Grammar of the Sanscrit Language,' folio, Calcutta, 1805; 'Amera Cosha, or Dictionary of the Sanscrit Language, by Amera Sinha,

with an English Interpretation and Annotations,' 4to., Calcutta, 1808; 'Two Treatises on the Hindoo Law of Inheritance, translated from the Sanscrit,' 4to., Calcutta, 1810; 'Algebra, with Arithmetic and Mensuration, from the Sanscrit of Brahmegupta and Bhascara,' 4to., London, 1817; a tract 'On the Import of Colonial Corn,' 8vo., London, 1818; and 'Miscellaneous Essays' (or reprints of previously published papers and prefaces), 2 vols. 8vo, London, 1837. He also, in conjunction with Professor Wilson, translated from the Sanscrit, for the Oriental Translation Fund, 'Sankhya Karika, or Memorial Verses on the Sankhya Philosophy, also the Bhashya,' &c., 4to., Oxford, 1837. Mr. Colebrooke held, with his two brothers, the patent place of Chirographer in the Court of Common Pleas. He died at his house in London, March 18, 1837.

COLEO'PTERA (κολεοπτερα), in Entomology, a name first applied by Aristotle ('Hist. Anim.,' i.), and now universally adopted to designate one of the orders into which insects are divided; the species of which order are commonly known by the name of *Beetles*. The characters of the *Coleoptera* may be summed up as follows:—

Head, mandibulate, with all parts of the mouth well developed; with two eyes composed of an immense number of lenses arranged closely together, in the form of hexagons; with two antennæ, varying exceedingly as to length, size, form, and appendages, but generally eleven-jointed. The mouth consists of a *labrum* or upper lip, two *mandibles* or jaws, two *maxillæ* or under jaws, a portion called the *mentum*, or chin, and the *clypeus*, or part to which the *labrum* is attached.

Thorax, consisting of three segments (distinct in the larva state), termed respectively *prothorax*, *mesothorax*, and *metathorax*. Besides these, a small posterior triangular plate may be observed, called the *scutellum*. To the *thorax* are attached the legs (one pair to each segment) and the wings.

Wings, usually four in number; the upper wings are stiff, horny, or coriaceous; they are termed *elytra*, and are attached to the *mesothorax;* they cover the true membranaceous wings, which when at rest are neatly folded up beneath them; they are not agitated in flight, but by their expansion give increase of surface, without adding to weight. The membranaceous wings are affixed to the *metathorax*. In some species of *Carabus*, the under or membranaceous wings are wanting, or merely rudimentary, and in some of these instances the *elytra* are soldered together, being useful only as armour to protect the *abdomen*. These insects are incapable of flight, and in this respect are analogous to certain *birds*, as the ostrich, apteryx, &c. The *elytra* differ greatly in form, smoothness, villosity, striations, &c.

Limbs, six in number (three pairs), formed for running, burrowing, leaping, swimming, or slow heavy progression, and therefore diversified in form *ad infinitum*. Yet, however variable in form, a limb may be divided into five principal parts:—1, the *Coxa*, or hip, joined to the *thorax*, where it plays in a socket; 2, the *trochanter;* 3, the *femur*, or thigh; 4, the *tibia*, or shank; and 5, the *tarsus*, never composed of more than five joints, often of a less number, and generally terminated by two hooked claws (*unguiculi*). The apex of the tibia is mostly furnished with two straight spines (*calceolaria*).

Abdomen, generally covered by the *elytra*, but by no means always so. In many instances these *elytra*, or wing cases, are very short, and in some the membranaceous wings even are not protected by them.

Larvæ, with habits variable; some live underground, feeding upon roots; some live in the trunks or the bark of trees, feeding on the decaying wood; some feed upon excrementitious matters; some upon leaves, others upon shelled fruits, as nuts, &c. The larvæ generally consist of 13 distinct segments, the head being included. The true legs are six in number (three pairs), a pair to each of the three segments next to the head; they are small, and usually terminated in a simple claw. Sometimes, in addition to these, they are furnished with false legs (pro-legs) which the animal can protrude at pleasure. Some larvæ have only two of these pro-legs attached to the terminal segment of the abdomen; some have more; others have none.

Pupa. Those larvæ that live in the ground generally prepare for the pupa state, by removing the soil that surrounds them, so as to form an oval chamber; others envelope themselves in a sort of cocoon, formed of particles of earth, &c., joined together by a kind of web or glutinous substance. Wood- or bark-feeding larvæ mostly assume the pupa state without such preparation. Some larvæ, which feed upon plants, inclose themselves in a cocoon; others again suspend themselves by the tail, and hang from a stalk or leaf of the plant on which they fed.

Food. The Coleoptera are, like the Mammalia, frugivorous, herbivorous, omnivorous, and carnivorous; some are foul-feeders, others delicate in the choice of their diet: some represent the tiger, some the hyæna or jackal, others the rodents, or vegetable feeders, and some the seals.

Arrangement. Mr. Stephens, in his 'Systematic Catalogue of British Insects,' arranges the Coleoptera as follows:—

Sect. 1. Adephaga.
- Sub-sect. 1. Geodephaga.
- „ 2. Hydradephaga.
- „ 3. Philhydrida.
- „ 4. Necrophaga.

Sect. 2. Chilognathomorpha.
- Sub-sect. 1. Clavicornes.
- „ 2. Lamellicornes.
- „ 3. Sternoxi.
- „ 4. Malacodermi.

Sect. 3. Helminthomorpha.
- Sub-sect. 1. Rhyncophora.
- „ 2. Longicornes.

Sect. 4. Anoplurimorpha.
- Sub-sect. 1. Eupoda.
- „ 2. Cyclica.
- „ 3. Trimeri.

Sect. 5. Heteromera.
Sect. 6. Brachelytra.

The arrangement of Latreille is founded on the number of joints of the tarsi, thus:—

Pentamera, 5 joints to the tarsus. *Heteromera*, 5 joints to the tarsi of the two anterior pairs of legs, 4 to the others. *Tetramera*, tarsi with 4 joints. *Trimeri*, tarsi with 3 distinct joints.

Mr. Waterhouse, an excellent entomologist, proposes the following arrangement:—

All the tarsi with five joints.

Sect. 1. Geodephaga. (MacLeay.)
„ 2. Hydradephaga. (MacLeay.)
„ 3. Brachelytra. (Latreille.)
„ 4. Necrophaga. (MacLeay.)
„ 5. Palpicornes. (Latreille.)
„ 6. Lamellicornes. (Latreille.)
„ 7. Sternoxi. (Latreille.)
„ 8. Malacodermi. (Latreille.)

Five joints to the tarsi of the two anterior pairs of legs, and four to the posterior pair.

Sect. 9. Heteromera. (Latreille.)

All the tarsi with four joints.

„ 10. Rhyncophora. (Latreille.)
„ 11. Longicornes. (Latreille.)
„ 12. Cyclica. (Latreille.)

All the tarsi with three joints.

„ 13. Trimeri. (Latreille.)

The number of species of Beetles known extends to between thirty and forty thousand.

Stephens's '*Illustr. of Brit. Entom.*;' Latreille, in Cuvier's '*Règne Anim.*;' Dejean, *Spécies Générale des Coléoptères*,' 5 vols.; also the works of Germar, Sturm, Knoch, and others.)

COLERIDGE, SAMUEL TAYLOR, was born at Ottery St. Mary, in Devonshire, of which parish his father was the vicar, on the 21st October, 1772. He was the youngest of a numerous family, and, having become an orphan at the age of nine, was sent to be educated at Christ's Hospital. Here he made very great progress in classical knowledge. In 1791 Coleridge entered Jesus College, Cambridge. While at the university he did not turn his attention at all to mathematics, but obtained a prize for a Greek ode, and distinguished himself in a contest for the Craven scholarship, in which Dr. Butler, the late Bishop of Lichfield, was the successful candidate. He did not take a degree. During the second year of his residence he suddenly left the university in a fit of despondency, and terminated this adventure by enlisting in the 15th dragoons, under the assumed name of Comberback. One of the officers, accidentally discovering his classical acquirements, was led to conclude that Comberback was something more than he professed. Questioning him in a friendly manner, and eliciting his real history, he communicated Coleridge's situation to his friends, who forthwith effected his discharge.

In the autumn of 1795 Coleridge married Miss Sarah Fricker, of Bristol, Southey on the same day being married to her sister. He now took a cottage at Nether Stowey, a village at the foot of the Quantock Hills, in Somersetshire.

During the three years in which Coleridge resided at Nether Stowey, a great part of his principal poems were composed, though most of them were not published until later.

In 1798 Coleridge was enabled, with the assistance of the late Mr. Thomas Wedgwood, to visit Germany, for the purpose, as he expressed it, of finishing his education. After his return from Germany, Coleridge resided at the Lakes, in the north of England, where Mr. Southey and Mr. Wordsworth had then settled, the one at Keswick, and the other at Grasmere. The appellation of Lake-Poets, given to these three individuals after the publication of the 'Lyrical Ballads,' is well known.

Coleridge left the Lakes in 1810, and did not afterwards return to them. On his first arrival in London he resided with Mr. Basil Montague, and not long afterwards became the inmate of Mr. Gilman's house at Highgate, where he continued to reside till his death in 1834.

'Samuel Taylor Coleridge, Logician, Metaphysician, Bard!' Such are the style and titles by which Charles Lamb, in one of his 'Essays of Elia,' apostrophises his illustrious friend. Coleridge was, indeed, all this. Into his poetry he infused no small portion of the subtle and far-seeing spirit of his philosophic speculations. And these, again, thrill with the finer animation, and are suffused with the coloured lights of poetry. Those who take their notion of what Coleridge was only from his written works will yet form an extremely inadequate conception of the whole sum and combination of his extraordinary endowments. No man ever fascinated so deeply by his conversational eloquence.

Of Coleridge's poetry, in its best specimens, the most distinguishing characteristics are vividness of imagination and subtlety of thought, combined with unrivalled beauty and expressiveness of diction, and the most exquisite melody of verse. With the exception of a vein of melancholy and meditative tenderness, flowing rather from a contemplative survey of the mystery—the strangely mingled good and evil—of all things, than connected with any individual interests, there is not much of human passion in his compositions, and he is not well fitted therefore to become a very popular poet, meaning by that a favourite of the multitude. Neither has he much of the homely every-day truth, the deep but universally applicable wisdom, which gives to so many of the verses of Wordsworth the indestructible life and impressiveness of proverbs, and roots them for ever in all hearts upon which they fall. Coleridge was 'of imagination *all* compact.' The fault of his poetry is the same that belongs to that of Spenser; it is too purely poetical. But rarely, on the other hand, has there existed an imagination in which there met together so much originality and daring, with so gentle and tremblingly delicate a sense of beauty.

As a prose writer, Coleridge is to be viewed as a critic and a metaphysician. His criticisms are mostly fragmentary; but they are the results of a comprehensive principle. He has done more than any English writer to make Shakspere understood, in a spirit of love and reverence. As a metaphysician, his consistent labour was to esta-

blish the great distinction between reason and understanding; to combat the material tendencies of his age, which had neglected the truths, interests, and studies which especially belong to the reason; and to connect the Christian faith with the full development of the reason, as 'the perfection of human intelligence.'

Since Mr. Coleridge's death in 1834, some of his works have been collected and republished in a neat form, and at a moderate price. The 'Poetical Works,' 3 vols.; 'The Friend,' a Series of Essays, 3 vols.; 'Aids to Reflection,' 2 vols.; 'On the Constitution of Church and State,' 1 vol.; 'Confessions of an Inquiring Spirit,' 1 vol.; 'Literary Remains,' 4 vols. To these has recently been added his 'Biographia Literaria,' a new edition, in 2 vols.

COLERIDGE, HENRY NELSON, the son of Colonel Coleridge, a brother of the poet, was born at the beginning of this century. He was educated on the foundation at Eton, and in due course was elected scholar, and subsequently fellow, of King's College, Cambridge. He took his degree of B.A. in 1823. The scholars of King's College having the somewhat questionable privilege of obtaining their degrees without examination, Mr. Coleridge's name is not found amongst the candidates for classical or mathematical honours; but he was well known in the University as one of great talents and rich acquirements, and he gave public evidence of his taste and scholarship, in 1820 and 1821, in the first of which years he obtained two out of the three of Sir W. Browne's medals, namely, that for the Greek ode and that for the Latin ode, and in the second year was again the successful candidate for the Greek ode. In 1823 he was a contributor, in conjunction with W. S. Walker, W. M. Praed, T. B. Macaulay, J. Moultrie, and others of his university, to Knight's 'Quarterly Magazine.' His papers, which bear the signature of 'Joseph Haller,' on 'The English Constitution,' 'The Long Parliament,' 'Mirabeau,' &c., are distinguished for a soundness of opinion, and a liberal and comprehensive view of historical questions, which are evidence of the extent of his acquirements beyond the ordinary range of university reading. Having fallen into ill health, Mr. Coleridge, in 1825, accompanied his uncle, the Bishop of Barbados, on his outward voyage. Upon his return to England in the same year, he published a most lively and amusing narrative of his tropical experiences, under the title of 'Six Months in the West Indies.' His restored health opened to Mr. Coleridge a course of honourable action. He was called to the bar by the Society of the Middle Temple, on the 24th November, 1826, and during the ensuing fourteen years gradually advanced to a good practice in the Court of Chancery. During this period he assiduously cultivated his literary tastes, and more especially dedicated all his leisure to the society of his illustrious uncle. The daughter of the poet, a most accomplished lady, herself an authoress, became his wife soon after he was called to the bar. In 1830 Mr. Henry Coleridge published an 'Introduction to the Study of the Greek Classic Poets.' Until the death of S. T. Coleridge, in 1834, his nephew most assiduously devoted himself to the grateful task of noting down with all reverence fragments of this extraordinary man's eloquent talk. In 1835 some of the results of this labour of love were given to the world in 'Specimens of the Table Talk of the late Samuel Taylor Coleridge,' in two small volumes. It has been objected that these fragments, in which Coleridge's opinions are arranged under particular subjects, give no just notion of the character of his talk. His nephew anticipates the objection: 'I know better than any one can tell me, how inadequately these specimens represent the peculiar splendour and individuality of Mr. Coleridge's conversation. How should it be otherwise? Who could always follow to the turning-point his long arrow-flights of thought?' Yet the book must always possess a deep interest. Of its literal truth as a record of Coleridge's opinions, however it may fall short of giving an adequate notion of his mode of expressing them, no one can doubt. Mr. Henry Coleridge subsequently published 'The Literary Remains of S. T. Coleridge,' 'The Friend,' 'Aids to Reflection,' &c. In this mass of materials, which we owe in great part to the unwearied industry of Mr. Henry Coleridge, amidst the short leisure of a laborious profession, will be found the best evidence of Coleridge's claims to a lasting reputation as a critic and a philosopher.

In 1842 Mr. H. Coleridge had a return of the painful maladies which had received a temporary relief in 1825. For many months he was prostrate on a bed of sickness, enduring pain with a most exemplary fortitude and cheerfulness, and supported by that strong religious feeling which formed a principal feature of his character. He died on the 26th of January, 1843, and was buried by the side of his uncle, in Highgate old churchyard.

COLET, JOHN, the founder of St. Paul's School, London, was born in London, in 1466, and was the eldest son of Sir Henry Colet, who had, besides him, 21 children. In 1483 he was sent to Magdalen College, Oxford, where he took the usual degrees in arts. He studied Latin, with some of the Greek authors through a Latin medium, and mathematics. From 1493 to 1497 he travelled in France and Italy. At Paris he became acquainted with Budæus, and was afterwards introduced to Erasmus. In Italy he contracted a friendship with numerous eminent persons, and especially with some of his own countrymen, among whom were Grocyn, Linacre, Lilly, and Latimer, all of whom were studying the Greek language, then but little known in England. Whilst abroad he devoted himself chiefly to divinity and the study of the civil and canon law. He returned to England in 1497 and was ordained deacon; he took priest's orders in the following year. Soon after this he retired to Oxford, where he read public lectures upon St. Paul's Epistles. In May 1505, he was instituted to the prebendary of Mora in St. Paul, London, and also appointed Dean. Colet reformed the discipline of the cathedral of St. Paul's, and by his preaching gave impulse to the inquiry which ended in the

Reformation; but the freedom of his opinions exposed him to danger. He was now rich, and he determined to retire into quiet, and also to dedicate his wealth to some lasting benefaction, which he performed in the foundation of St. Paul's School, of which he appointed William Lilly first master in 1512. He ordained that there should be in this school a high master, a sur-master, and a chaplain, who should teach gratis a hundred and fifty-three children, divided into eight classes; and he endowed it with lands and houses then producing an income of 122*l.* 4*s.* 7½*d.* per annum, of which endowment he made the Company of Mercers trustees. The gross average income of St. Paul's School is now above 5000*l.* per annum. He died in September 1519, in his fifty-third year, and was buried in St. Paul's choir. Dean Colet's works were:—1. 'Oratio ad Clerum in Convocatione,' anno 1511; reprinted by Dr. Samuel Knight, in the appendix to his Life of Colet, with an old English translation of it, supposed to have been done by the author himself. 2. The construction of the Eight Parts of Speech, entitled 'Absolutissimus de Octo Orationis Partium Constructione Libellus,' 8vo., Antw. 1530. 3. 'Rudimenta Grammatices,' for the use of his school, commonly called 'Paul's Accidence,' 8vo, 1539. 4. 'Daily Devotions;' said not to be all of his composition. 5. 'Monition to a godly Life,' 8vo., 1534, &c. Many of his letters are printed in Erasmus's Epistles, and five, with one from Erasmus, in the appendix to Knight's Life. (Knight's *Life of Dr. John Colet*, 8vo., London, 1724; Wood's *Athenæ Oxon.*; Chalmers's *Biog. Dict.*, vol. x. pp. 31-36.)

COLIC (from κῶλον, *colon*), *dolor colicus*, called by Sydenham and the old English writers the Dry Belly-Ache, a disease attended with severe pain of the bowels, remitting and recurring at intervals, with constipation, and without fever. The seat of this malady is conceived to be chiefly, if not entirely, in that portion of the large intestines called the colon, and hence its name. It arises from a great variety of causes, and assumes a corresponding variety of forms, many of which have received distinct names; but pain and constipation of the bowels, with the absence of fever, are common to them all; and this concurrence of symptoms is essential to the medical notion of colic.

Colic is attended with severe griping pains in the bowels, which often follow very accurately the course of the colon; sometimes having their seat in one portion of it, and sometimes in another. These pains remit for a time, affording intervals of ease; but they soon return with increased violence. They are often relieved by pressure, a character by which they are distinguished from pain occasioned by inflammation, the latter being always increased by pressure. The pain is usually attended with a greater or less degree of flatulence. The flatus sometimes collects to such an extent as to occasion a prodigious dilatation of the bowels, greatly increasing the pain. While one portion of the intestine is thus preternaturally distended, another portion is in a state of preternatural contraction, from the irregular spasmodic action of the muscular fibres of the colon, excited by the irritating cause—whatever it may be—which produces the disease. These irregular spasmodic contractions of the colon are always present when this disease is severe, and are intensely painful. The constipation, which is so constant as to be a diagnostic character of the malady, is often long continued and obstinate, and the consequent accumulation of feculent matter is very great. To the preceding train of symptoms is very frequently superadded vomiting, which is often urgent and most distressing. It is only necessary to observe, respecting the treatment, that the two great principles on which the cure depends are the complete evacuation of the intestine, and the strict regulation of the diet. It is indispensable that the evacuation of the intestine of its accumulated and irritating contents should be complete; and this is best effected by an alternation of mild and unirritating aperients, with opiates. After the intestine has been fully relieved of its load, it is necessary to persist in a course of mild aperients for a considerable time; because the bowel long remains in an irritable state, and very slight causes are apt to occasion a relapse. For the same reason, only the most bland and unirritating substances should be taken as food; all acid and acrid matters in the solid and all stimulating matters in the fluid aliment should be most carefully avoided.

COLIGNY, GASPARD DE, born in February 1516, was the son of Gaspard de Coligny, Lord of Châtillon-sur-Loing and Marshal of France. Coligny served in Italy under Francis I., and was present at the battle of Cerisoles. Henry II. made him Colonel-General of Infantry, and afterwards, in 1552, Admiral of France. Coligny however continued to serve in the army by land. He defended St. Quentin against Philip II., and was made prisoner at the surrender of the place. Having embraced the reformed religion, he became, with Louis, Prince of Condé, one of the great leaders of the Protestant party against Catherine de' Medici and the Guises, during the reign of Charles IX. After the loss of the battle of Dreux, in which Condé was taken prisoner, Coligny saved the remains of his army. He fought throughout the war, and was at the battles of St. Denis, Jarnac, and Moncontour. After the peace concluded at St. Germains in 1570, he came to court, and was well received, but on August 22, 1572, he was shot at and wounded in the street by an attendant of the Duke of Guise. Two days after this attempt upon Coligny's life, the massacre of 'la Sainte Barthélemi' took place. The Duke of Guise himself led the murderers to the house of the admiral, whom they stabbed in several places, and threw, still breathing, out of the window into the court, where he fell at the feet of the Duke of Guise. His body was left exposed to the fury of the populace, and at last was hung by the feet to a gibbet. (Coligny, *Hommes Illustres de France; Dictionnaire Universel Historique*, art. 'Coligny.')

COLIN, ALEXANDER, the sculptor of the excellent marble alti-rilievi of the celebrated tomb of the Emperor Maximilian I. in the Kreuzkirche at Innsbruck. Colin was born at Mechlin in 1526, and in 1563 was invited by the Emperor

Ferdinand I. to Innsbruck, to complete the altirilievi of his grandfather's tomb, which had been commenced by the brothers Abel. They were completed by Colin, with the help of assistants, in three years. Colin executed also the two monuments of his patron the Archduke Ferdinand of the Tyrol and his first wife Philippa, in a chapel in the Hofkirche at Innsbruck: the latter bears the date of 1581. He died at Innsbruck in 1612. (Von Lemmen, *Tirolisches Künstlerlexikon.*)

COLLATIO, or MOSAICARUM ET ROMANARUM LEGUM COLLATIO, or LEX DEI, is a compilation, probably made in the sixth century of our æra. It consists of a comparison between the Law of Moses and the Roman Law, in sixteen titles. Each title has certain legal rules at the head from the Law of Moses, headed thus, 'Moses dicit;' to which are subjoined, by way of comparison, rules of Roman law taken from the five Roman jurists—Papinian, Paulus, Gaius, Ulpian, and Modestinus—and from the three compilations which preceded that of Justinian—the Gregorianus Codex, Hermogenianus Codex, and Theodosianus Codex. The value of the Collatio consists solely in the extracts which it contains from the sources above mentioned. The last and best edition of the Collatio is by Blume, in the Bonn edition of the 'Corpus Juris Ante-Justinianei,' and in the separate edition of 1833, 8vo. It is also printed in Schulting's 'Jurisprudentia Vetus Ante-Justinianea,' Leyden, 1717.

COLLATION. [ADVOWSON; BENEFICE.]

COLLE, RAFFAELLINO DAL, an Italian painter, born at Colle, near Città San Sepolcro, but in what year is not known, generally considered as one of the scholars and assistants of Raphael in the Farnesina and in the Vatican; but he was certainly, according to Vasari, the assistant of Giulio Romano in Rome, and probably at Mantua, and also of Vasari himself at Florence in 1536. As Vasari did not write the life of Raffaellino dal Colle, little is known about him. He appears to have been chiefly employed in the neighbourhood of Città San Sepolcro, at Urbino, Perugia, Pesaro, Gubbio, Cagli, and Città di Castello, in which places he executed several fine altarpieces, which still exist, and exhibit him as one of the best disciples of the Roman school. The date of his death is not known. (Lanzi, *Storia Pittorica*, &c.)

COLLE'GIUM or CONLE'GIUM (from the word *colligo*, 'to collect, or bring together') literally signifies any association or body of men. The word Corpus was also used by the Romans in the same sense, and those who were members of a collegium or corpus were hence called corporati; from which come our terms corporation and corporators. The word Corporatio (Corporation) was also used under the Empire. The word Universitas was often used as equivalent to Collegium or Corpus, but it has a larger meaning than collegium. [CORPORATION.]

A great variety of collegia (many of them like our companies or guilds) existed at Rome both before and under the empire, such as the Collegia Fabrorum, Pistorum, Pontificum, Fratrum Arvalium, Virorum Epulonum, Augurum, &c. Some of these, such as the colleges of Pontifices and Augurs, were of a religious character. These collegia could hold property as a corporate body. Collegia had a common chest, and an actor, syndicus, or attorney, to look after their rights and interests, and appear on their behalf. ('Dig.' 3, tit. 4, s. 1.) The correct legal notion of a collegium is explained under CORPORATION and UNIVERSITY.

Collegia are sometimes called Societates; but the proper sense of Collegium must not be confounded with the proper sense of Societas, which is merely a partnership.

In England a College is an Eleemosynary Lay Corporation, of the same kind as an hospital, and it exists as a corporate body either by prescription or by the grant of the king. The term college does not necessarily mean a place of learning, nor hospital a place for sick people. But most places called colleges are places of learning.

A college is called Eleemosynary, because its object is the perpetual distribution of alms (eleemósynæ) or bounty of the founder, among such persons as he has mentioned in the terms of the endowment. It is called a Lay Corporation, because it is not subject to the jurisdiction of the ecclesiastical courts, or to the visitation of the ordinary or diocesan in his spiritual capacity. These eleemosynary corporations however are generally composed of spiritual persons, and have a spiritual character; but they are considered as lay corporations for the reason just mentioned.

The particular form and constitution of a college depend on the terms of the foundation. A college generally consists of a head, called by the various names of provost (præpositus), master, rector, principal, or warden, and of a body of fellows (socii), and generally of scholars also, besides various officers or servants, according to the peculiar nature of the foundation. A college is governed by the statutes and ordinances which the founder makes. If there is no special visitor appointed by the founder, the right of visitation, in default of the heirs of the founder, devolves upon the king, who exercises it by the great seal. When the king is founder, his successors are the visitors.

The general power of a visitor is to judge according to the statutes of a college, to expel and deprive for just reason, and to hear appeals. The visitor may visit whenever he is called on. So long as a visitor keeps within his jurisdiction his acts cannot be controlled. The heirs of a founder cannot alter the statutes, unless such a power is reserved; and it appears that, where the king is founder, his successors cannot alter statutes without the consent of the college, unless such a power is reserved. As to the alteration of statutes, it must be observed that, in the case of the crown at least, it has not unfrequently been done, though such a power might possibly be disputed, unless expressly reserved to the founder and his successors by the original statutes.

The Court of Chancery exercises jurisdiction on all matters pertaining to the management of the funds, for as to the funds of a college those who possess the legal estate are in the situation of trustees.

Colleges (13 Eliz. c. 10) cannot grant leases of their land beyond twenty-one years, or three lives; and in such leases the accustomed yearly rent, or more, must be reserved, payable yearly during the term. By 18 Eliz. c. 6, in all leases made by colleges in the universities, and by the colleges of Winchester and Eton, one-third of the whole rent must be reserved in corn. The Mortmain Act of 9 Geo. II. c. 36, which has put considerable obstacles in the way of gifts of land or money to be laid out in land in England for charitable purposes, does not extend to the two universities of Oxford and Cambridge, or to colleges in the two universities, nor to gifts in favour of the scholars of Eton, Winchester, and Westminster.

Of late years various places of learning have been incorporated under the name of Colleges by royal charter, such as University College and King's College, London. Both these colleges consist of a large number of shareholders or proprietors. Neither University College nor King's College confers degrees; but the students of both colleges may take degrees in the University of London, subject to certain regulations. The College of Physicians in London, and the College of Surgeons, are instances of civil corporations established under the name of colleges; and the Herald's College is another.

A Collegiate Church is defined to be a church that has a college or chaptet of canons, but no bishop. These collegiate churches are sometimes simply called colleges, and were formerly more numerous. Westminster,' Windsor, Eton, Winchester, and Southwell, are collegiate churches. Probably schools were always a part of such foundations: those of Eton, Westminster, and Winchester, have schools.

As to the relation between the English universities and the colleges within their limits, see UNIVERSITY.

Meiners ('Geschichte der Entstehung und Entwickelung der Hohen Schulen,' &c., Göttingen, 1802, vol. i.) has given an interesting chapter on the origin of colleges in universities. The colleges in the University of Paris were the first institutions of the kind in Europe, though it is a mistake to suppose them older than the university itself.

The terms College and University have been often confounded in modern times, and indeed are now sometimes used indiscriminately. Some of the incorporated places of learning in the United States, which confer degrees, are called universities, and some are called colleges, though there is in fact no distinction between the two. Some of these institutions called colleges contain the schools or departments of arts, law, medicine, and theology; and some that are called universities contain only those of arts, law, and medicine. Some of these colleges are more limited as to the objects of instruction, but still they confer degrees.

COLLEGE. [COLLEGIUM.]

COLLIER, JEREMY, was born September 23, 1650, at Stow Qui, in Cambridgeshire. In 1669 he was admitted of Caius College, Cambridge, and in 1676 he took the degree of M.A. He took orders, and received a small rectory at Ampton, in Suffolk, which he resigned in 1685, and came to London, when he was appointed lecturer of Gray's Inn. At the revolution of 1688 he put himself in opposition to the government and the church as established under William III., and engaged in a hot controversy with Burnet, afterwards bishop of Salisbury. In the course of a few following years he published several controversial works, for which he was twice imprisoned, and in 1696 he was prosecuted for giving church absolution to Sir J. Friend and Sir W. Perkins, who were convicted of being accessories in a plot to assassinate King William. Collier absconded and was outlawed. The outlawry was never revoked, but the energetic divine, after the first rigour was abated, seems to have cared little for it. He lived in London or its suburbs till his death, supporting himself by his literary labours. In the year 1697 he published the 1st volume of his 'Essays upon several Moral Subjects,' adding a 2nd vol. in 1705, and a 3rd in 1709. These essays were much admired at the time. It was, however, in 1698 that he produced the work by which he is now best known: 'A Short View of the Immorality and Profaneness of the English Stage, together with the Sense of Antiquity upon this Argument,' 1 vol. 8vo., which led to a controversy with Congreve and Vanbrugh.

Between the years 1701 and 1721 he translated and published Moreri's great 'Historical Dictionary,' and wrote and published 'The Ecclesiastical History of Great Britain,' in two huge folio volumes. He died on April 26, 1726.

COLLIMATION, ERROR OF. In most instruments the line of sight is supposed to have a certain relation to other parts. Thus in a transit telescope it ought to be perpendicular to the horizontal axis; in a circle or quadrant it should be in a horizontal or vertical direction when the reading of the limb is 0° or 90°. When this is not the case, the difference between the existing and required positions is called the *error of collimation*, which must be carefully ascertained, and be corrected or allowed for, or eliminated in the mode of conducting the observations. Many readers will have a general notion of the error of collimation from the mode in which a workman tries the truth of his square, or of the mason's level, which in principle is nearly allied to the methods of astronomers.

COLLIMATION, LINE OF, the line of sight in any astronomical or geodesical instrument. Where a telescope is used, this name is given to the line joining the centre of the object-glass and the intersection of the fine wires or spider-webs in its focus, this being the direction of any object which is there seen bisected by the observer.

COLLIMATOR, the name given by Captain Kater to his contrivance for determining the error of collimation in any principal instrument, without the reversal of the instrument itself.

COLLIN, properly KOLLIN, a well-built walled town in the Bohemian circle of Kaurzim, situated on a rock above the Elbe, stands in 49° 59′ N. lat., 15° 10′ E. long., and has 6000 inhabitants. Large quantities of garnets, topazes, and

carnelians are found in the vicinity, and polished here. There are also manufactories of calico and potash.

COLLINGWOOD, CUTHBERT, ADMIRAL LORD, was born September 26, 1750, at Newcastle-upon-Tyne. At the age of eleven he was sent to sea, passed through the various ranks of his profession during the American War, and in 1776 he took the command of the Hornet sloop, and soon after met, at Jamaica, with his favourite companion, Horatio Nelson, who was then lieutenant of the Lowestoffe.

After some minor services, and having been wrecked in the Pelican in August 1781, he was sent to the West Indies in the Mediator in 1783, and remained with his friend Nelson on that station till the end of 1786. He then returned, after 25 years' uninterrupted service, to Northumberland. In 1790 he again went to the West Indies, but a quarrel with Spain being amicably arranged he soon returned, and seeing, as he says, no further hope of employment at sea, he 'went into the north and was married.' In 1793 the war with the French Republic called him away from his wife and two infant daughters. As captain of the Barfleur he bore a conspicuous part in Lord Howe's victory of the 1st of June, 1794. In 1797 he commanded, with his usual bravery and almost unrivalled nautical skill, the Excellent 74, in Jarvis's victory of the 14th of February, off Cape St. Vincent. In 1799 he was raised to the rank of rear-admiral. The peace of Amiens, for which he had long prayed, restored him to his wife and children for a few months in 1802, but the renewed war called him to sea in the spring of 1803, and he never more returned to his home. Passing over many less brilliant but still very important services, Collingwood was second in command in the battle of Trafalgar, fought on the 21st of October, 1805. His ship, the Royal Sovereign, was the first to attack and break the enemy's line, and, upon Nelson's death, Collingwood finished the victory, and continued in command of the fleet. He was now raised to the peerage. After a long and most wearying blockade of Cadiz, the Straits of Gibraltar, and adjacent coasts, during which, for nearly three years, he hardly ever set foot on shore, and showed a degree of patience and conduct never surpassed, he sailed up the Mediterranean, where his position involved him in difficult political transactions, which he generally managed with ability. Completely worn out in body, but with a spirit intent on his duties to the last, Collingwood died at sea on board the Ville de Paris, near Port Mahon, on the evening of March 7, 1810.

(*A Selection from the Public and Private Correspondence of Vice-Admiral Lord Collingwood, interspersed with Memoirs of his Life*; by G. L. Newnham Collingwood, 2 vols. 8vo., second edit. London, 1828.)

COLLINS, JOHN, was born at Wood Eaton, in Oxfordshire, March 5, 1624, and died in London, November 10, 1683.

Collins was an early member of the Royal Society, but his claims to remembrance are the intimate communication in which his attainments placed him with all men of science at home and abroad, from Newton downwards. The principal result however of their epistolary intercourse is the work on the invention of fluxions, published in 1712, under the title of 'Commercium Epistolicum,' &c. [FLUXIONS.]

COLLINS, ANTHONY, was born in 1676 at Heston, in Middlesex. After the usual preparatory studies at Eton, he went to King's College, Cambridge. He then became a student of the Temple, married a daughter of Sir Francis Child, lord mayor of London, and was the intimate friend of Locke, who bequeathed to him some property, and the guardianship of a young person. In 1707 Collins published an essay concerning human reason as supporting human testimony. It was replied to by Bishop Gastrell. The same year he entered into a controversy with Dr. Samuel Clarke, in support of Dr. Dodwell's book against the natural immortality of the human soul. Five successive rejoinders were elicited. ('General Dict.,' fol., 1736; and 'Biog. Brit.') In 1709 he published 'Priestcraft in Perfection, or a detection of the fraud of inserting and continuing this clause (the church hath power to decree rites and ceremonies, and authority in controversies of faith) in the 20th article.' This work occasioned a long-continued controversy, as did also his next works, 'A Vindication of the Divine Attributes,' and 'A Discourse on Freethinking.' The last was answered by Dr. Bentley and by Bishop Hare. In 1715 he published his 'Philosophical Inquiry concerning Liberty and Necessity,' which was reprinted in 1717 in 8vo., with corrections. It was translated into French, and is printed in the 'Recueil de Pièces sur la Philosophie,' &c., by Des Maizeaux, 2 vols. 12mo., 1720. Dr. Samuel Clarke replied to the necessarian doctrine of Collins, chiefly by insisting on its inexpediency, considered as destructive of moral responsibility. In 1724 he published his 'Grounds and Reasons of the Christian Religion.' This work created a great sensation in the Church, and drew forth a great number of replies from some of the most eminent divines. In the final answer of Collins ('Scheme of Literal Prophecy,' 1726), he enumerates five-and-thirty replies which appeared during the two first years after its publication. Collins was a magistrate of Middlesex and Essex for many years, and was treasurer of the county of Essex for a part of the time, and in these offices he gave great satisfaction. He died in December 1729, in London. Collins, as a writer, is remarkable for the great shrewdness of his reasoning; and for still greater subtilty in masking the real drift of his arguments with orthodox professions. (*General Dictionary; Biog. Brit.*; Hollis's *Memoirs*.)

COLLINS, WILLIAM, the son of a hatter at Chichester, was born December 25, 1720. He was educated at Winchester and at Oxford. Soon after taking his bachelor's degree, he quitted the university abruptly, about 1744, and repaired to London as a literary adventurer. He won the cordial regard of Johnson, then a needy labourer in the same vocation, who, in his 'Lives of the Poets,' has spoken of him with tenderness.

His Odes were published, on his own account, in 1746. They were not popular; and it is said that, disappointed with the slowness of the sale, he burnt the remaining copies with his own hands. He was relieved from his embarrassments by a legacy of 2000*l.* from an uncle; but he sank gradually into a species of melancholy and intellectual languor, to relieve which he resorted to intoxication. He was for some time confined in a house of lunatics, and afterwards retired to the care of his sister at Chichester, where death, in 1756, came to his relief.

Collins is inferior to no English lyric poet of the eighteenth century, except Gray. His Odes to 'Fear,' and the 'Passions,' afford the best specimens of his genius; and the well-known 'Dirge in Cymbeline' is admirable in a softer style.

COLLIOURE. [PYRENE'ES-ORIENTALES.]

COLLISION, from the Latin *collisio*, the striking against each other of two bodies. The Collision or Percussion of bodies is that part of Dynamics in which are contemplated the effects arising from the impact of a moving body on one which is either at rest or in motion. The mathematical laws of collision are stated under the word Impact [IMPACT]; and it is intended here to notice only the general effects which take place when one body is made to strike another.

The effects will evidently depend upon the directions of the motions, with respect to a line joining the centres of gravity of the two bodies, and upon the nature of the bodies themselves. If the directions coincide with such line, the contact taking place either in a plane perpendicular to such line, or in a point through which may pass a plane perpendicular to the line and touching the surfaces of both bodies, the impact is said to be direct; but, if the directions are otherwise, the impact is said to be oblique.

All bodies in nature have certain degrees of softness by which their particles yield to the force of impact: all have, at the same, time certain degrees of hardness by which they resist the effort to penetrate each other; and they have certain degrees of elasticity by which their particles, after being displaced, tend to recover their original positions: these properties exist in bodies in different degrees.

In the case of direct impact, the body struck, if previously at rest, is put in motion; and if in motion, its movement is merely accelerated or retarded; but in the case of oblique impact, both bodies being in motion, their velocities and the directions in which their centres of gravity were moving are changed, and there may be produced rotatory motions about those centres.

When a body in motion strikes another, whether at rest or in movement, the particles of the first body, at the place of contact, have their forward motions retarded, in consequence of which the particles immediately behind approach closer to those in front than they were before the impact, and thus a condensation takes place. This condensation gives rise to an exertion of the force of elasticity, which acts against the succeeding particles, retarding the motions of these last and giving rise to a new condensation and a new exertion of elasticity against the next succeeding particles; and so on. The like actions must be understood to take place in the body struck; and these actions continue in both bodies till the bodies have attained the state of greatest compression, when, for a moment, both may be conceived to move with a common velocity. After this, the force of elasticity overcoming the force of compression, the particles of both bodies gradually return to a permanent state, which, if the elasticity were perfect, would be the same as that in which they were before the impact, the force of restitution thus causing the bodies to separate as if repelled from each other. A certain interval of time elapses between the instants of first contact and separation, but this is so short as to be scarcely sensible.

If the striking bodies have spherical forms, so that the contact may take place, at the first instant, in a point, their surfaces about that point will have their figures changed; and, if the bodies have different degrees of hardness, an indentation may take place in that which is the least hard, the other penetrating to a certain distance in it. When the bodies are soft, like balls of wet clay, the change of figure produced by collision is manifest; but when two balls possess an elasticity which is nearly perfect, they so far recover their original figure after impact, that the change is not perceptible; it may be rendered evident however on covering one of the spheres with ink and suffering it to impinge on the other; the latter then receives a stain which, instead of being a point, is a circle of sensible magnitude; and this proves that the surfaces must have been flattened at the point of impact. In Treatises of Mechanics it is shown that, when a rammer is used to drive a pile, neglecting the weight and inertia of the pile, and considering it to be resisted by friction in the material penetrated, the product of the weight of the rammer, multiplied by the square of its velocity at the moment of striking, is equal to the square of the resisting force of friction multiplied by a term which is inversely proportional to the hardness of the rammer and material. Therefore, when this hardness is very great, it is manifest that a vast resistance arising from friction will be overcome by the percussion arising from the descent of a comparatively small rammer. It has been observed that a sledge-hammer, in driving hard pegs, produces an effect equivalent to the pressure of 70 tons. It should be added here, that the shock produced in a material, when divided by a wedge or penetrated by a nail, either of these being driven with a force produced by a sudden blow of a hammer, may, by displacing the particles of the material, diminish their cohesive power; and this may be, in part, the reason that the effect of percussion often exceeds that of a weight many hundred times greater than that of the hammer.

The force of elasticity is very different in different bodies. Spheres of glass are those in which the force of restitution (after impact) approaches nearest to the force of compression; and, in such spheres, the ratio between the forces is as 15 to 16: in spheres of ivory the ratio is as 8 to

9; and in spheres of steel, as 5 to 9. In investigations relating to collision, the force of elasticity is represented by a fraction whose numerator and denominator have to one another the ratio of the force of restitution to that of compression; and, if a body were perfectly elastic, this force would, of course, be represented by unity.

The bodies upon which experiments on collision are made are generally of a spherical form, in order that, when they impinge upon one another directly, it may be indifferent at what part of the surfaces of the bodies the contact takes place: the bodies are usually suspended by a string or rod from fixed points; and they are made to impinge upon one another while describing circular arcs, in a vertical plane, about the point of suspension. The absolute momentum, or quantity of motion in a body, is represented by the product of its mass and the velocity with which it is moving: but the effects of the collision of two bodies depend on their relative velocity, or that with which they approach to or move from one another; this is the sum of the absolute velocities when the bodies, in approaching each other, move in opposite directions, and the difference when they move in the same direction.

For investigations concerning the magnitude of the impression on a body struck, the duration of the shock, and the ratio of percussive force to that of gravity, see Atwood's *Treatise on Motion*, Gregory's *Mechanics*, and Whewell's *Mechanics*; also, for the effects of the collision of bodies, whatever be their forms, see Poisson's *Traité de Mécanique*, No. 465, &c., Seconde Edition.

COLLISION OF SHIPS. [SHIPS.]

COLLUMPTON. [DEVONSHIRE.]

COLMAN, GEORGE, commonly called 'the Elder,' was the son of Francis Colman, Esq., and was born at Florence about 1733. He was educated at Westminster and at Oxford. While at Oxford, he published, in conjunction with Mr. Bonnel Thornton, the periodical paper called 'The Connoisseur.' Fixing on the law for a profession, he was entered at Lincoln's Inn, and duly called to the bar. In 1760 he produced his first dramatic piece, entitled 'Polly Honeycomb,' at Drury Lane, with great success. This was followed in 1761 by the comedy of 'The Jealous Wife,' and in 1766 by that of 'The Clandestine Marriage,' written in conjunction with Mr. Garrick. In 1767 he became a partner and acting manager of Covent Garden; and in 1777 he purchased the little theatre in the Haymarket of Mr. Foote. In 1785 Mr. Colman was seized with the palsy, which in a few years terminated in a state of idiotism. He died at Paddington, August 14, 1794. Besides his dramatic works, Mr. Colman was the author of a translation in blank verse of Terence, a translation of and commentary on Horace's 'Art of Poetry,' and several fugitive pieces.

COLMAN, GEORGE, 'the Younger,' son of the preceding, was born October 21, 1762. He was educated at Westminster, Oxford, and King's College, Aberdeen. He entered himself as a law student at the Temple, but soon devoted himself to the stage. During the illness of his father and after his death, he had the management of the Haymarket Theatre, and when he retired he was appointed by his Grace the Duke of Montrose, then Lord Chamberlain, Examiner of Plays, which situation he held to the day of his death, October 26, 1836. Mr. Colman was the author of several plays and farces: amongst the most popular are 'John Bull,' 'The Poor Gentleman,' 'Heir at Law,' 'Inkle and Yarico,' 'Iron Chest,' 'Mountaineers,' 'Surrender of Calais,' 'Ways and Means,' 'Review,' 'Blue Beard,' 'X. Y. Z.,' and 'Love Laughs at Locksmiths.' He also wrote the well-known comic tales entitled 'Broad Grins,' 'Poetical Vagaries,' &c., and a variety of smaller poems. His last literary work was the publication of his own memoirs up to the time of his entering on the management of the Haymarket, in 2 vols. 8vo.

COLMAR, the capital of the department of Haut-Rhin, in France, stands on the Lauch and the Fecht, both tributaries of the Ill, a feeder of the Rhine, at a distance of 279 miles from Paris, 41 miles by railway S. from Strassburg, in 48° 5′ N. lat. and 7° 21′ E. long., and has 19,908 inhabitants.

The town, which is beautifully situated in a plain near the foot of the Vosges Mountains, has well-built houses, but the streets are ill laid out; they are however kept clean by small streams from the Lauch and the Fecht. It is entered by three gates. The Place-de-la-Cathedrale is the principal square, and in it the weekly market is held. The ramparts are planted with trees, and there are several handsome promenades on the south side of the town, outside the gate of Bâle. The cathedral is the most remarkable building; the tower is ascended by 303 steps, and on the inside of its walls inscriptions in Hebrew, Greek, Latin, and German recount the dreadful ravages of the plague of 1541. The other objects worth notice are—the court-house; town-house; college, (which has a library of 36,000 volumes, and a collection of paintings on wood by Martin Schön, Albert Dürer, and others); the institution for deaf-mutes; hospital; theatre; museum; and the beautiful church of the Dominicans, in the nave of which the corn-market is now held. The Cour Royale for the departments of Haut-Rhin and Bas-Rhin is held in the town, which has also tribunals of first instance and of commerce.

Colmar is one of the principal seats of the cotton manufactures in France. The machinery of its numerous factories is chiefly moved by the mountain-streams above named, but steam is also largely employed. All descriptions of cotton goods, as well as cloth, hosiery, ribands, room-paper, and leather, are manufactured. The town has also large cotton-printing and cotton-spinning establishments; and a brisk trade in corn, wine, iron, groceries, &c.

COLN. [BUCKINGHAMSHIRE; THAMES.]

COLNBROOK. [BUCKINGHAMSHIRE.]

COLOBUS, a genus of quadrumanous Mammalia (monkeys), peculiar to Africa, and representing the *Semnopitheci* of India and the Indian islands.

Generic Characters.—Thumb of the fore-hands reduced to a nailless tubercle, but with the bones

in a rudimentary condition beneath the skin; tail long; hair soft, silky, often long and flowing; the last molar tooth of the lower jaw with a fifth posterior tubercle; cheek-pouches wanting; laryngal sacculi; stomach large and sacculated; body slender, limbs long; superciliary ridge prominent; callosities moderate; facial angle from 40 to 45 degrees.

Till within the last few years, the genus *Colobus* comprised only two species, the Full-Bottom Monkey of Pennant (*Colobus polycomus*), and the Bay Monkey of the same author (*C. ferruginosus*). More recently, Kuhl, Rüppell, Ogilby, Waterhouse, and others, have added to the list. The following species are now established: 1. The King Monkey, or Full-Bottom Monkey of Pennant (*Colobus polycomus*, Geoffr.; *C. ursinus*, Ogilby, in 'Proceeds. Zool. Soc.,' 1835). Fur, very long, glossy, and black; head, grayish white; tail white, tufted at the extremity. Locality, Western Africa, Sierra Leone. 2. The Guereza (*C. guereza*, Rüppell). General colour black; sides of the body and top of the loins ornamented with long white pendent hairs, forming a fringe-like mantle; face encircled by white; tail ending in a white tuft. Locality, South and West Abyssinia. 3. The White-thighed Colobus (*C. leucomerus*, Ogilby in 'Proceeds. Zool. Soc.,' 1837; *Semnopithecus vellerosus*, Isid., Geoff.; *S. bicolor*, Wesmael), Western Africa. 4. The Black Colobus, (*C. Satanas*, Waterhouse, in 'Proceeds. Zool. Soc.,' 1838), Fernando Po. 5. The Bay Monkey, (*C. ferruginosus*, Geoffr.), Sierra Leone. 6. Temminck's Colobus (*C. Temminckii*, Kuhl.; *C. fuliginosus*, Ogilby, in 'Proceeds. Zool. Soc.,' 1835), Western Africa. 7. The Red and Black Colobus (*C. rufo-niger*, Ogilby, 'Cat. Mamm. Zool. Soc.' Suppl. 26A. and 26A.a, 1839), Western Africa. 8. Pennant's Colobus (*C. Pennantii*, Waterhouse in 'Proceeds. Zool. Soc.,' 1838), Fernando Po. 9. Beneden's Colobus (*C. verus*, Beneden, 1838), District unknown. 'Proceeds. Zool. Soc.,' 1841.

The *Colobi* may be divided, according to their fur and colouring, into sets or sections. Of these one section contains the species, either wholly black, or black ornamented with white, and with the hair of the whole body, or of certain parts, peculiarly long and flowing. Another section contains a set with long glossy hair, but not so long on an average as in the former, and remarkable for the mixture of black and bright maroon bay and yellow, or dark and light bay, with which they are coloured; in size, too, they scarcely equal the former. A third section may be added, in which the fur is comparatively short, and, though still soft, partaking more than does that of the others of the texture of the fur of the *Cercopithéci*, or ordinary African monkeys; it also agrees in colour with that of a numerous group of Cercopitheci, being olive, varying from a brownish to a greener tint, the hairs being annulated with black, a peculiarity not found in either of the foregoing sections, nor yet in the Indian *Semnopitheci*. Of this section only one example is known, namely, the *Colobus verus* of Beneden, if indeed it be a *Colobus*.

COLOCA'SIA, a kind of arum, the leaves and tubers of which are used as food by the natives of the south of Europe.

COLOCYNTHIS. [CUCUMIS.]

COLOCZA, or KOLOTSCHA. [HUNGARY.]

COLOGNE, one of the four governments of the Prussian Rhein-Provinz, lies along both banks of the Rhine, and is traversed by that river for about 28 miles from N. to S. It forms the south-western part of the former province of Jülich-Kleve-Berg or Kleve-berg, and lies N. of the government of Coblentz, E. of that of Aachen, S. of that of Düsseldorf, and W. of the province of Westphalia. The eastern portion is hilly; the western and northern parts contain few elevations. The government extends about 45 miles from E. to W.; it is watered by the Rhine and several of its feeders, the Mühlenbach, the Sieg, the Strundesbach, the Wipper, &c.; it is also traversed by several railways. The area is 1532 square miles; the population in 1843 was 465,363. Coal, lead, and iron mines are worked. The principal manufactures are woollen cloth, linen, leather, Eau-de-Cologne, potash, tobacco, sugar, pottery, &c. The chief towns are COLOGNE and BONN. [RHEIN-PROVINZ.]

COLOGNE (*Köln*), the capital of the government of Cologne and of the Prussian Rhein-Provinz, is situated in 50° 58′ N. lat., 6° 53′ E. long., 212 miles by railway E. from Ostende, and has 80,000 inhabitants, including the garrison and the suburb of Deutz on the right bank of the Rhine. The city extends in a crescent-shape along the left bank of the Rhine; it is inclosed by a lofty wall, defended by 83 towers, and surrounded with ramparts and deep ditches. It has 24 gates on the land and water sides; and in front of the 7 principal gates strong redoubts are erected.

Cologne owes its origin to the Romans. It was a Roman station, and subsequently a colony, under the name of *Colonia Claudia Agrippinensis*, so called from the Emperor Claudius, and his wife Agrippina, who was born there. It continued to be the capital of Lower Rhenish Gaul till 330, and after a frequent change of masters was annexed to the German empire in 870. Cologne was one of the most powerful and wealthy cities of the Hanseatic League. At that time it could muster an armed force of 30,000 men, and its population amounted to 150,000. From the 11th to the 16th century it carried on a flourishing commerce by means of its own shipping with all the countries of Europe, in most of which it had factories. Its university was one of the most famous in Germany, and the progress of its inhabitants in the arts is attested by its architecture, sculpture, painted glass, and pictures. But intestine divisions, the expulsion of the Jews in 1429, the public destruction of its looms, which compelled their owners to emigrate, and various other causes, hastened its decline. Cologne ceased to be a free town in 1792.

Cologne is divided into four sections, and is built in a very irregular manner; the streets, many of which still retain their Roman names, are narrow, dark, and crooked, and paved with

basalt. It contains 25 churches, 8 chapels, a synagogue, and many other public buildings. The cathedral is the most magnificent monument of Gothic architecture in the world. The name of the architect who furnished the original plan, which still exists, is unknown, but the structure was begun in 1284 by Archbishop Conrad of Hochstedten. It is in the form of a cross, 500 feet in length, and 200 in breadth; the roof rests on 100 columns, of which the four central ones are 30 feet in circumference. The only part however which was finished until the present century was the splendid choir (which is 180 feet high), with its surrounding chapels and its superb painted glass windows. Of the two towers, which were intended to be 500 feet in height, one was raised only half this elevation, and the other not more than 21 feet. But by the munificence of the Prussian government, and by means of subscriptions, the works have been lately resumed, especially since 1842, and the body of this magnificent cathedral is now nearly completed, and it is said will be solemnly opened in the course of the present year (1848). It contains the tombs of Conrad its founder, Mary de Medicis, and abounds in relics and curiosities, especially the chapel of the Three Kings, which is richly adorned with gold and precious stones. Among the other interesting churches are those of St. Ursula, St. Columba, the Annunciation, St. Gereon, and St. Peter, which last contains the 'Crucifixion of Peter' painted by Rubens. The other buildings of note are—the ancient Carthusian convent; the town-hall; the Gurzenich, where the diet formerly met; the archiepiscopal palace; the court-house; the exchange; theatre; museum; the Roman tower, &c. Between Cologne and Deutz is a bridge which rests on 39 pontoons, and is 1250 paces long.

Cologne is the residence of an archbishop, and the seat of various public boards. It contains two gymnasia; has several good libraries; collections of Roman antiquities, MSS., coins, natural history, &c.; and a great number of educational establishments.

The manufactures of Cologne are cotton yarns, cotton goods, hosiery, woollens, silks, velvets, tobacco, brandy and spirits, Eau de Cologne, of which above a million bottles are annually exported, &c. Being a free port, and having communication by railway with Belgium and various parts of Germany, Cologne has an important transit trade in home and foreign produce. In the vicinity of the city are several coal-mines, and abundance of a particularly fine sort of porcelain-earth and potter's clay. Steamers ply regularly between Cologne and the towns along the Rhine.

COLOMBIA is the name assumed by New Granada and Venezuela in 1819, when they united under one central government for the purpose of resisting the Spaniards. Having gained their independence, they separated in 1831, and now form the three republics of VENEZUELA, NEW GRANADA, and ECUADOR. [See also BOLIVAR.]

COLOMBO, the capital and seat of the British government in Ceylon, is situated on the western coast of the island, in 6° 57′ N. lat. and 80° E. long., 368 miles S.W. from Madras. The fort is on a promontory, two-thirds of the extent of which are washed by the sea. It is strong by art as well as by nature: it embraces a circuit of about a mile and a quarter, and has eight principal bastions. Four of these bastions are towards the sea, and three face a lake and command the narrow approach from the town. The fort is surrounded, except on the side of the sea, with a deep moat; and a lake bordering on the glacis adds to the strength of the place. Inside the fort are several straight and regular streets, and it contains the residence of the governor, called the King's House, and a light-house, a beautiful edifice, erected a few years ago, the light of which is 97 feet above the level of the sea. The principal government offices are within the fort; also an English church; a library; a medical museum; an hospital; two hotels; and numerous shops.

The lake before alluded to, being connected by canals with the Mutwal River, almost insulates the town.

Colombo has a small semicircular harbour admitting vessels not exceeding 200 tons. Ships of larger burden anchor in the roads.

The town is regularly built, with streets running E. and W., and others at right angles to them. The houses are built of a species of clay iron-stone, called *cabook*, whitewashed, and the town presents a good appearance. The population is composed of Europeans, burghers, Malabars, Singhalese, and Moors, besides some Malays, Chinese, Parsees, and Arabs. The population, according to recent estimates, amounts to between 60,000 and 70,000.

Among the public buildings are the Supreme Court-house, and the various public offices. There is also a library belonging to the burghers; a small-pox hospital; a masonic hall, and a number of religious edifices. The Dutch church, erected in 1746, is a lofty building in the form of a cross, standing in the centre of the town.

The commerce, external and internal, is very extensive. The exports to Europe are cinnamon, pepper, coffee, cocoa-nut oil, plumbago, cordage, arrack, cardamoms, elephants' tusks, deer horns, tortoise-shells, ebony, satin-wood, &c.; and the imports consist of articles of European manufacture. Colombo is connected with Calpentyn by a canal which is carried through a series of lakes; it was commenced by the Dutch, and completed in 1829. An excellent carriage road has been carried across the island from Colombo to Trincomalee, about 165 miles, direct distance; it was completed in 1833.

The climate of Colombo is very salubrious. The average range of the temperature is from 76° to 86½° Fahr., and the mean daily variation does not exceed 3°. The tropical rains are here sometimes accompanied with dreadful thunder-storms.

Colombo is mentioned in Singhalese history as early as 495 A.D. The Portuguese visited Colombo in 1518, and soon afterwards erected a fort. By taking part in the intestine wars, the Portuguese gradually extended their influence over the whole island, but in 1656 the Dutch wrested Colombo from them after a siege of seven months, and expelled them from the sea-coast. In 1796 the Dutch surrendered it to the British.

COLON. The alimentary canal below the stomach is divided into the small and great intestines. The former consist of the duodenum, jejunum, and ileum; the latter of the colon and rectum. The *colon* commences a little above the right groin, in the right iliac fossa, in the form of a dilated pouch, which is called the *caput coli*, or more commonly the *cæcum*, from its blind rounded extremity. The ileum opens obliquely into the left side of this pouch, its inner or mucous membrane projecting so as to form the *ileo-cæcal valve*, which, permitting the contents of the small intestine to pass into the colon, suffices to prevent their return, except in peculiar cases of diseased action. Near the same part of the cæcum opens also a slender contorted intestine about two inches long, likewise blind, which is called the *appendix vermiformis*, from its resemblance in the human subject to a worm. From the right iliac region the colon passes upwards along the side to the under surface of the liver. Hence it turns to the left, just below and in front of the stomach, to which it is connected by the *omentum*, a loose pendulous membrane, formed by a double fold of the peritoneum, and spread like an apron in front of the small intestines. Having reached the opposite side of the abdomen, the colon passes downwards to the left iliac fossa; thence, taking two sudden turns to the right and downwards, it descends into the pelvis over the last lumbar vertebra, and becomes continuous with the rectum.

The colon is enveloped in the serous membrane called the peritoneum, which forms the external covering of all the abdominal viscera. This outer tunic, passing entirely round it, meets behind, and forms a duplicature called the *mesocolon*, which attaches it, more loosely at the arch than at the sides, to the spine and loins, and serves as a medium for the passage of nerves and vessels, and the lodgment of absorbent glands.

The colon is amply supplied with blood-vessels, nerves, lymphatics, and ducts, which pour out the mucus that lubricates the interior, as well as various excrementitious matters here separated from the blood as being injurious or useless.

The colon is alone or conjointly the seat of many disorders, such as cholera, colic, constipation, diarrhœa, dysentery, enteritis, ileus, introception, obstruction, and is liable to ulceration in the course of hectic and other fevers, as well as from local causes. It is occasionally the seat of stricture, and is not unfrequently protruded in the various forms of intestinal rupture.

COLONEL, the commander of a regiment or battalion of troops; he is the highest in rank of those called Field-Officers, and is immediately subordinate to a General of Division.

The derivation of the word is uncertain. It is supposed to have been given originally to the leader of a body of men appointed to found a colony, or to have come from the word *coronarius*, indicating the ceremony of investing an officer with the command of a corps; or, finally, from the word *columna*, denoting the strength or support of an army.

The title of Colonel-general was, for the first time, conferred by Francis I., about the year 1545, on officers commanding considerable divisions of French troops; though, according to Brantome, it was used at an earlier time: it was suppressed by Louis XIV. in 1661, and from that time the commanders of regiments had the title of Colonel.

In England, the constitution of the army was formed chiefly on the model of the French military force; and the terms regiment and colonel-general were introduced into this country during the reign of Elizabeth. It must, moreover, be observed that, in the regulations made by the citizens of London for forming the militia in 1585, it is proposed to appoint *colonels* having authority over ten captains; and that both colonels and lieutenant-colonels are distinctly mentioned in the account of the army which was raised in order to oppose the threatened invasion of the country in 1588. Before the time of Elizabeth, it appears that the commanders of bodies of troops equivalent to regiments had only the general title of Captain.

The duties of colonels are described in Ward's 'Animadversions of Warre,' which was published in 1639; and, from the account there given, it appears that those duties were then nearly the same as they are at present. To the colonel of a regiment, besides the general superintendence of the military duties performed by the troops composing it, is intrusted the care of providing the clothing of the men and of appointing the agent through whom their pay is transmitted. Colonels take precedence of one another according to the dates of their commissions, and not according to the seniority of their regiments.

The lieutenant-colonel is immediately under the full colonel. He assists the latter in directing the evolutions of the battalion or regiment, and commands it during the absence of his superior officer.

If appointed after March 31, 1834, the annual pay of a colonel is, in the Life and Horse Guards, 1800*l.*, without other emolument; but in all other regiments the colonel derives emoluments from clothing. The annual pay, exclusive of these emoluments, is—in the Grenadier Guards, 1200*l.*; in the Coldstream and Scots Fusilier Guards, 1000*l.*; in the cavalry regiments generally, 900*l.*; and in the regular infantry, 500*l.* The daily pay of a lieutenant-colonel is, in the Life Guards, 1*l.* 9*s.* 2*d.*; in the Foot Guards, 1*l.* 6*s.* 9*d.*; in the Royal Artillery, Horse, 1*l.* 7*s.* 1*d.*; Foot, 18*s.* 1*d.*; in the Royal Engineers, 18*s.* 1*d.* and 16*s.* 1*d.*; and in the Royal Marines and in the Infantry of the line, 17*s.*

COLONIAL AGENTS. Most of the British colonies have agents in England, whose duties do not appear to be very accurately defined. A person called 'the agent-general' acts for the crown colonies; but where there is a local legislature the appointment is generally made by it. Previously to the separation of the North American colonies, most of them had a special agent in England for the management of their affairs, to whom a salary was given. They were appointed by the Assemblies, and sometimes confirmed by the governor. The House of Assembly of Lower Canada several times appointed special agents, the last of whom was Mr. Roebuck, who was heard at the bar of both Houses of Parliament in opposition to the Bill to suspend the constitution of Lower Canada.

COLONNA is the name of one of the oldest and most illustrious families of Italy, which has produced popes, cardinals, princes, and generals, and has always taken an active part in the political affairs of Italy. The Colonna were of the Guibeline party: their rivalry with the Orsini and other Roman barons, and their quarrels with several popes, especially with Boniface VIII., are recorded in the history of the middle ages. The Colonna have an extensive palace with gardens on the slope of the Quirinal at Rome.

COLONNA, FRA FRANCESCO, a learned Dominican and architectural writer of the 15th century, was author of a very singular work, 'Hypnerotomachia Poliphili,' first printed by Aldus, in 1499. This extraordinary production, which is a sort of romance, or rather vision, interwoven with descriptions of imaginary edifices, has drawn forth the most opposite opinions, being treated as contemptuously by some as it has been extravagantly extolled by others. Colonna was born at Venice about the year 1433; soon after 1466 he took the Dominican habit, and entered the monastery of Santi Giovanni e Paolo at Venice, where he died in July 1527, at the age of ninety-four.

COLO'NNA, VITTO'RIA, born in 1490, was the daughter of Fabrizio Colonna, Great Constable of the kingdom of Naples. She married Francis Davalos, marquis of Pescara, who served with distinction in the armies of Charles V., and contributed greatly to the gaining of the battle of Pavia. Pescara was offered the crown of Naples, on condition of betraying the interest of Charles, but he refused, through the representations of his wife, as is said, and seized the agent Morone (minister of Sforza, duke of Milan), who was put to death. Pescara died towards the end of 1525, aged thirty-six years, and his wife determined on spending the remainder of her life in religious seclusion. She wrote several poetical effusions lamenting the death of her husband, and also upon religious subjects. ('Rime Spirituali di Vittoria Colonna,' Venezia, 1548.) Her beauty, her talents, and her virtue were extolled by Michael Angelo, and by Ariosto, in canto 37 of the 'Orlando Furioso.' She died in 1547, at Rome, and was styled 'a model of Italian matrons.' (Corniani, Tiraboschi, &c.)

COLONNADE. [CIVIL ARCHITECTURE.]

COLONNES, CAPE. [ATTICA.]

COLONY, in Latin *colónia*, a word derived from the verb *cólere*, to till or cultivate the ground, originally signified a number of people transferred from one country or place to another, where lands were allotted to them. The people themselves were called Colóni, a word corresponding to our term colonists. The meaning of Colonies was extended to signify the country or place where colonists settled, and is now often applied to any settlement or land possessed by a sovereign state upon foreign soil. The present notion of the word 'colony' (as determined by the general use of the term) seems to be a foreign country, either wholly or partly colonised, that is to say, possessed and cultivated by natives, or the descendants of natives, of another country, and standing in some sort of political connection with and subordination to the mother-country. The notion of a British colony implies that the waste lands belong to the British crown. The continental possessions called British India are not a colony: the island of Ceylon is a colony.

The formation of colonies is among the oldest events recorded in history or handed down by tradition. Maritime states, such as those of Phœnicia and of Greece, which possessed only a scanty territory, would have recourse to emigration as their population increased. The emigration was sometimes the result of civil contentions or foreign conquest, by which the losing party were either driven away, or preferred seeking a new country to remaining at home. The state itself, having discovered, by means of its merchants and mariners, some country to which they could trade with advantage, might determine upon sending out a party of settlers, and might establish a factory there for the purpose of sale or exchange. In fact, commercial enterprise seems to have led both to maritime discovery and to colonisation as much as any one single cause. Such seems to have been the cause of the numerous Phœnician colonies which, at a very early date, were planted along the coasts of the Mediterranean. Hippo, Hadrumétum, Utica, and Tunes were Phœnician colonies, and all of greater antiquity than Carthage, which was subsequently settled by Phœnicians in the neighbourhood of Tunes. The Phœnician colonies extended along the north coast of Africa as far as the Pillars of Hercules (the Straits), and along the opposite coast of Spain, as well as to the Balearic Islands, and Sardinia and Sicily.

Some of the islands of the Greek Archipelago were early occupied by the Phœnicians and Carians; but subsequently they all received Greek settlers. Others of the Mediterranean, such as Sicily and Sardinia, were first occupied by Phœnician or Carthaginian settlers. But the chief field of Phœnician colonisation was the north coast of Africa, where the Phœnician settlements seem to have been independent, both of the mother-country and of each other. Utica and Tunes continued separate communities even after Carthage had attained great power, and Carthage only exercised the supremacy.

The colonies established afterwards by the Carthaginians, in the interior as well as on the coasts of Africa, Sicily, and Spain, were made through conquest, and for the purpose of keeping the country in subjection, like those of the Romans, with the remarkable exception of the colonies planted by Hanno on the west coast of Africa.

The earlier Greek colonies appear to have owed their origin to the same causes as those of the Phœnicians. The Athenians, whose country was overflowing with people from other parts of Greece, who had flocked thither for security, began to send out Ionians, as Thucydides terms the settlers, to the country in Asia called after them Ionia, and to many of the islands: the Peloponnesians sent theirs to Italy, Sicily, and some parts of Greece. The Dorians from Mégaris, Argos, Corinth, and other places, colonised some of the larger islands, part of Creta, Rhodes, Corcyra, as well as Ægina, Cos, and other islands. For a detailed acco-

the numerous Dorian colonies in Asia and elsewhere, see K. O. Müller's 'History of the Doric Race.'

The Ionians from Attica, who emigrated to the west coast of Asia Minor, which took from them its name Ionia, established there twelve cities or communities, which quickly rose to a high degree of prosperity, and formed a kind of federal union. These Ionians who settled in Asia were a mingled people, of whom the Ionians who emigrated from Athens considered themselves the best part. Four generations before the Ionian emigration, according to Strabo (p. 582, ed. Cas.), the Æolians and some Achæans, two nearly allied races, being driven away from part of the Peloponnesus by the Dorians, had emigrated to the coast of Asia Minor, where they formed colonies from Cyzicus on the Propontis as far southwards as the Hermus. Many of these colonies, having thriven and increased, becames colonisers in their turn. The enterprising mariners of Phocæa formed various colonies, the most celebrated of which is Massilia (Marseille), on the south coast of Gaul. Milétus, also one of the Ionian cities, was the parent of numerous colonies, many of which were on the south coast of the Black Sea.

The Greek colonies on the east coast of Italy consisted chiefly of Dorians and Achæans from the Peloponnesus.

The relation which subsisted between the Greek colonists and the prior inhabitants of the countries which they occupied was in most cases that of conquerors and subjects. In some instances the older inhabitants were reduced to the condition of serfs or bondmen to the new settlers. On the coast of Italy it would appear that the Greeks pursued a more humane or more politic course. They are said to have allied themselves to and intermarried with the natives, and by their superior civilisation to have acquired great influence.

The relations between these Greek colonies and the mother-country, and between those colonies that were of a kindred race, may be gathered pretty clearly from Thucydides (i. 24, &c.) in the affair of Epidamnus and Corcyra. It was argued by the Corcyræans that 'a colony ought to respect the mother-country as long as the mother-country deals justly and kindly by it; but if the colony be injured, and wrongly used by the mother-country, then the tie is broken, and they become alienated from each other, because,' said the Corcyræans, 'colonists are not sent out as subjects, but as free men to have equal rights with those who remain at home.' (i. 34.) This shows the kind of relation as understood by the Greeks between the metropolis or mother-country and its colonies. The colonies were in fact sovereign states, attached to the mother-country by ties of sympathy and common descent, so long as those feelings were fostered by mutual good-will, but no further. The Athenians, it is true, in the height of their power, exacted money from their own colonies as well as from the colonies of other people, and punished severely those who swerved from their alliance, such as Naxos; but this was not in consequence of any original dominion supposed to belong to the mother-country over the colony. Many of the colonies, especially the earlier ones, which were the consequence of civil war or foreign invasion, were formed by large parties of men under some bold leader, without any formal consent being asked from the rest of the community: they took their families, their arms, and their moveables, with them, to conquer a new country for themselves; they left their native soil for ever, and carried with them no political obligations. Those that went off in more peaceful times, by a common understanding of the whole commonwealth, went also away for ever, and freely and voluntarily, though under a leader appointed by the parent state, to seek a country where they could find an easier subsistence than at home. In either case it was a complete separation of a member from the body. Such were the proper colonies (ἀποικίαι) of the Greeks; but they were not colonies in the modern sense of the word, nor colonies in the Roman sense. We have derived from the Romans the name of colony, and our colonies resemble theirs in a great degree, and bear no resemblance to the so-called Greek colonies. Indeed, the Greek colonies should be called by another name; and the word 'foreign settlements,' or the German term 'auswanderung,' comes nearer to the sense of Apoikia (ἀποικία) than the term colony. When the Athenians, in later times, took possession of parts of Eubœa (Thucyd., i. 114), of Ægina (ii. 27), and of Melos (v. 116), and shared the lands among their own citizens who went there, the relationship thus formed was of a different kind, and came nearer to the nature of a Roman and a modern colony. Yet Thucydides calls the settlers in Melos Apoikoi; but the name Clerúchi was usually given to such settlers, and their allotments were called Cleruchiæ. The relation between the settlers called Clerúchi and the parent state of Athens appears not to have been always the same; that, in some cases at least, they retained all the privileges of Athenian citizens is sufficiently clear. The battle of Ægospótami deprived the Athenians of their foreign dependencies, though they were partially recovered. But Athens never succeeded in establishing a system of colonies on a sure and lasting basis, as the Romans did.

Colonies were established by the Romans during the kingly period (Livy, i. 11, 27, 56); and the practice was continued after the expulsion of Tarquinius Superbus, the last king. (Livy, ii. 21, 39.) The Roman colonies remained subject to the mother-country, whose authority they were the means of enforcing upon the conquered nations. They were, in fact, like so many garrisons or outposts of Rome. The notion of an early Roman colony was this: the colonists occupied a city already existing; and this, with perhaps one exception or two, was the general character of the early Roman colonies in Italy. These colonists were a part of the Roman state; they secured her conquests, and maintained the subject people in obedience. When the Romans afterwards extended their conquests into countries where there were no regular towns, or where the population was fierce and hostile, and the Roman settlers must be ever on their guard against them, they built new towns in some favourable position.

Such was the case in several parts of Gaul, Germany, and Spain. The first Roman colony beyond the limits of Italy was that founded on the site of Carthage, in the tribunate of Caius Gracchus, B.C. 122. Narbo Martius (Narbonne), in the south of France, was one of the early colonies beyond the limits of Italy. Sometimes colonies, especially at a great distance from Rome, having dwindled away, or being in danger from the neighbouring people, asked for a reinforcement, when a fresh colony was sent, which also received grants of land. (Livy, ii. 21; vi. 30; xxxi. 49.) Each of the older colonies, it is observed by Gellius (xvi. 13), was a Rome in miniature; it had its senators called Decuriones, its Duumviri, Ædiles, Censores, Sacerdotes, Augurs, and other officers.

A distinction must be made between Roman colonies and Latin colonies. The citizens who went out to form a Roman colony retained all their civic rights. The members of Roman colonies which were called Latin colonies (Coloniæ Latinæ) had not the Roman citizenship, and those Roman citizens who went out in such a colony thereby lost their suffrage; they voluntarily renounced part of their civic rights in consideration of a grant of lands. These Latin colonies were Roman colonies, inasmuch as they were subject to the Roman state; and hence they are sometimes called Roman colonies, which in one sense they were. But, as opposed to Roman colonies which consisted of Roman citizens (Coloniæ Civium), they were called Latin colonies, by which term was denoted their political condition. Before the Social War (B.C. 90), the following was the classification of people in the Roman dominions.

1. Cives Romani, Roman citizens, that is, the inhabitants of Rome, the citizens of the Coloniæ Civium or proper Roman colonies, and the citizens of the Municipia without reference to the stock to which they belonged.

2. Latini, or the citizens of the old towns of the Latin nation, with the exception of those towns which were raised to the rank of Municipia, and also the numerous and important Coloniæ Latinæ.

3. Socii (Allies), the free inhabitants of Italy who did not belong to the two classes first enumerated, and belonged to very various national stocks.

4. Provincials, the free subjects of the Romans beyond the limits of Italy.

This is the division of Savigny ('Zeitschrift für Geschichtliche Rechtswissenschaft,' xi. 6). He adds, that as to the political condition of the people included under these four heads, those included under the first head, Cives Romani, were alone Cives; those included under the three other heads were called Peregrini. According to this view, the members of Latin colonies before the Social War were simply subjects of the Roman state: they had none of those political capacities which were the characteristics of Roman citizenship. As the term Peregrinus, however, was very comprehensive, and included all who were not Cives, it follows that, according to this view, the Latinæ Coloniæ and foreigners not under Roman dominion were precisely on the same footing as to the privileges of Roman citizens; but their condition differed in this, that foreigners (aliens, properly so called) were not Roman subjects, but the members of Latin colonies were. This view is perhaps on the whole right, yet the inhabitants of Latin colonies were in a sense Cives, as contrasted with foreigners not subject to Rome, though they were not Roman citizens, in the sense of those who had all the capacities of Roman citizenship.

The result of the Social War was, that the Roman citizenship (civitas) was given to all the inhabitants of Italy south of the Po: all became Romani Cives; and the Latini—the inhabitants of Coloniæ Latinæ—and the Socii were all merged in the class of Cives. The distinction of Romani Cives and Peregrini still subsisted; but the class of Roman citizens had become enlarged. A new class of persons was now established, and distinguished by the name of Latini. This term now did not denote a particular people, but a political status—an imperfect citizenship, by virtue of which this new class had the right of acquiring property (commercium) just like Roman citizens; but they had not the connubium, or civic right of contracting such a marriage as would be a Roman marriage. But, in certain cases, a Latinus might acquire the Roman citizenship; for instance, by holding the high offices in his city. This rule was first established for the people north of the Po, and then given to many towns, and to large tracts out of Italy. The privilege which the Romans sometimes conferred on a town or district, under the name of Jus Italicum, was a different thing from the Jus Latii. 'It had no reference to the status of individuals, but to the condition of many communities. When a provincial town received as a special favour by a Privilegium those rights which were the peculiar privileges of the Italian towns, this favour was called Jus Italicum. It consisted of three things: a free constitution, with the choice of their own magistrates, such as are mentioned in the Italian Municipia and Colonies (Duumviri, Quatuorviri); exemption from land-tax and poll-tax; the capacity of the land within the limits of the community to be held in Roman ownership (ex jure Quiritium), and the consequent application to such land of the Roman rules of law, as to Mancipation and Usucapion.' (Savigny, *Zeitschrift*, &c., xi.)

The Roman Agrarian Laws, or the laws for the distribution of public land, were often passed with the view of founding a colony: and this became a usual mode of providing for veteran soldiers. Perhaps one of the earliest instances is mentioned by Livy (xxxi. 4). Julius Cæsar and Octavianus Augustus added to the number of these military colonies, and the practice of establishing them in parts beyond Italy existed under the Empire.

The early system of colonies adopted by Rome had a double political object; to secure the conquered parts of Italy, and to satisfy the claims of its own poorer citizens by a division of lands among them. By their colonies in Spain, Gaul, on the banks of the Rhine, and in Britain, the Romans established their language and their system of administration. The imprint of

Empire is indelibly fixed on all the most civilised nations of Europe.

The Roman Provincial system must not be confounded with their Colonial system. A Roman province, in the later sense of that term, meant a country which was subjected to the dominion of Rome, and governed by a prætor, proprætor, or proconsul sent from Rome, who generally held office for a year, but sometimes for a longer period. Thus Spain, after the Roman conquest, was a Roman province, and was divided into several administrative divisions. The earliest foreign possession that the Romans formed into a province was Sicily (B.C. 241). The condition of the provinces, viewed as a whole, with respect to Rome was uniform: they were subject countries. But the condition of the towns in the provinces varied very greatly: some had the Jus Italicum, or privilege of Italian towns, in the sense already explained, and these were probably in most cases settlements of Roman citizens; some towns retained most or perhaps all of their old privileges; and others were more directly under the Roman governor. Thus, while the whole country was a dependency on Rome, particular cities might have all the privileges of Italian cities; and others would be in a less favoured condition. Both under the Republic and the Empire, but still more under the Empire, the Romans established colonies, both of Roman citizens and Latin colonies, in their provinces; and in this way they introduced their language and their law. The Romans never gave the name of colony to any of their provinces. There were Roman colonies in Britain; but Britain itself was not a colony: it was a province. In modern usage, whenever the word colony is applied to a country, it includes all the territory of such country.

The Northern tribes who overthrew the Western Empire did not found colonies; they overran or conquered whole provinces, and established new states and kingdoms. But, after a lapse of several centuries, when Europe had resumed a more settled form, the system of colonisation was revived by three maritime Italian republics, Pisa, Genoa, and Venice. Their first settlements on the coasts of the Levant and Egypt were mercantile factories, which the insecurity of the country soon induced them to convert into forts with garrisons—in short, into real colonies. The Genoese established colonies at Famagosta in Cyprus, at Pera and Galata, opposite to Constantinople, and at Caffa, in the Crimea, in 1266.

The Venetians established colonies in what are now called the Ionian Islands, and in Candia and Cyprus. Their system resembled that of Rome; by means of their colonies and garrisons they governed the people of those islands, whom they left in possession of their municipal laws and franchises. These were not like the settlements of the Genoese, merely commercial establishments—they were for conquest and dominion; in fact, Candia and Cyprus were styled kingdoms subject to the Republic.

When the Portuguese began their voyages of discovery in the 15th century, they took possession of some islands or points on the coasts of Africa and of India, and left there a few soldiers or sailors under a military commander, who built a fort to protect the trade with the natives, and afterwards also to keep those natives under a sort of subjection. No great emigrating colonies were sent out by them, except in after-times to Goa and the Brazils, which is really a colony of Portuguese settlers. The Spaniards, when they discovered America, took possession of the soil, and formed real colonies kept up by successive emigrations from the mother-country. In the West India Islands the natives were made slaves, and by degrees became extinct under an intolerable servitude. On the main land they were exterminated in some places, and in others reduced to the condition of serfs or tributaries. The Spaniards colonised a great part of the countries which they invaded. The Spanish American colonies had for their objects both agriculture and mining. The English North American colonies were the consequence of emigration, either voluntary or produced by religious persecution and civil war at home. The Puritans went to New England, the Quakers to Pennsylvania, and the Cavaliers to Virginia. They formed communities under charters from the crown, and local legislatures, but were still subject to the sovereignty of the mother-country. The mother-country sent its governors, and named, either directly or indirectly, the civil functionaries. The precise amount of obedience that the colonies then owed to the mother-country cannot be exactly defined. The American revolution only showed that it did not extend to a certain point, without showing how far it did extend.

A new feature has appeared in modern European colonisation, that of penal colonies. Convicts were sent by England first to North America, and afterwards to New Holland, by France to Guiana, by Portugal to the coast of Angola, and by the Dutch to Batavia. They were either employed at the public works, or hired to settlers as servants, or were established in various places to cultivate a piece of land, for which they paid rent to the government. The policy of penal colonies has been much discussed; and there are weighty objections against them. [TRANSPORTATION.]

The advantages which may result from colonies to the mother-country appear to be, the extension of the manufactures and the trade of the mother-country by the demand for home products which arises in the colonies, the consequent impulse given to industry in the mother-country, and the opportunities which industrious labourers and small capitalists have of mending their condition by emigrating to a country where labour is wanted, and where land can be had at a moderate price. The establishment of a colony draws capital from the mother-country, which is a disadvantage to the parent state, unless the colony also draws off superabundant labourers; and without a due supply of labour the exportation of capital to a colony is unproductive in the colony, while it diminishes the wealth and the productive power of the parent state. If a colony is to be a matter of expense to the state, if the administration of it is to be maintained entirely or in part at the ex-

pense of the mother-country, that is a direct loss to the parent state. And if, in order to support such colony, or the interests of any body of persons that are connected with it, the trade of the mother-country is encumbered by regulations which diminish the free interchange of commodities with other countries, and render foreign products dearer to the citizen of the parent state, that is another manifest loss to the parent state. The history of modern colonisation, on the whole, shows that the parent states have sustained great loss by the system of colonisation that has been adopted; but it cannot therefore be inferred that colonisation may not be placed on such a footing as will make it both advantageous to the parent state, and to those who live in the colony under its protection.

France has the French West India Islands, and French Guiana in America; Senegal, on the coast of Africa; the island of Bourbon; Pondicherry, in the East Indies; and Algeria, on the north coast of Africa.

Spain has lost her vast dominions in Mexico and South America, but has retained the fine islands of Cuba and Puerto Rico; she has also the Philippine Islands.

Portugal has lost the Brazils, but has still numerous settlements on the coast of South and East Africa, at Angola, Benguela, Loango, and on the Mozambique; but these settlements are the most degenerated of all European colonies. In India, the Portuguese retain Goa, and they have a factory at Macao, and a settlement on the northern part of the island of Timor.

The Dutch have the islands of Curaçoa and St. Eustaz, and Surinam in Guiana. In Asia they have the great colony of Batavia with its dependencies, various settlements on the coasts of Borneo, Sumatra, Celebes, and the Molucca Islands.

The Danes are possessed of the islands of St. Cruz and St. Thomas in the West Indies; and Christianburg, near Accra, on the Guinea coast.

The Swedes have the Island of St. Bartholomew in the West Indies.

A society of North American philanthropists has founded, since 1821, on the Guinea coast, a colony of emancipated negroes, who have been transferred thither from the United States. The colony is called Liberia.

England was not the first among European nations that planted settlements in parts beyond Europe. But by her own colonisation, and by the conquest of the settlements of other nations, she has now acquired a more extensive dominion of colonies and dependencies than any other nation.

Some of the *English Colonies* have local legislatures, elected by the people, and a governor and executive council named by the crown. In New South Wales, which obtained a legislative council in 1842 (5 & 6 Vict. *c.* 76), twelve of the thirty-six members are appointed by the crown, and the remainder are elected by the people. The colonies which are governed by the secretary of state for the colonies, without the interference of a local legislature, are termed Crown Colonies. In such colonies there is an executive council, which consists partly of *ex-officio* members who hold offices at the pleasure of the crown, and partly of persons selected from among the principal inhabitants, who are likewise removeable at pleasure. The foreign commerce of these colonies is regulated by the sovereign parliament of the mother-country, and put on such a footing as generally to allow the products of the colonies admission into the British ports on more favourable terms than the like products of other countries. To the amount of this protecting duty, the colonies then have the advantage of a monopoly in the markets of the mother-country. The old strict colonial system of excluding foreign countries from direct commercial intercourse with the colonies had the double object in view of securing all the supposed advantages of the exchange of British for colonial products, and giving employment to the British merchant navy. The rigour of this system, however, has gradually relaxed, and given way to clearer views of self-interest. Still the colonial system, as maintained by Great Britain, presents in many instances examples of foreign possessions which are expensive to the country without any equivalent advantage; and also of foreign possessions the trade with which is so regulated as to be designedly put on a footing which shall be favourable to the colony and unfavourable to the parent state. This is effected by discriminating or differential duties, as they are termed, the effect of which is to make the consumer of sugar (to take that as an example) in Great Britain pay to the favoured colonies a sum equal to the difference between the duty on colonial sugar and the higher duty on other sugar. The mother-country, which imposes this additional duty to protect her colonial subjects, not only gets no revenue by such ill-timed partiality in favour of her foreign dependencies, but she loses the increased revenue that she might have, if she would allow her own people to buy foreign sugar on the same terms as the sugar of the colonies.

The direct expenditure in some of the colonies for the purposes of administration is beyond the means of the colonial revenues to meet, and the deficiency must of course be supplied by the parent state. Colonial possessions put some amount of patronage at the disposal of the home government, and colonies are looked upon as profitable things by those who participate in the advantages of posts and places in them. On the other hand, those who only contribute to these expenses may reasonably ask for some proof of solid advantage to the parent state in return for the deficiency which she supplies. Setting aside the interests of those concerned in the administration of the colonies, it is asked, in many cases, what advantage does the rest of the nation receive? So far as some colonies may be desirable posts for protecting British commerce and shipping, the advantage of maintaining them may be fully equivalent to the expense. But in every particular instance the question as to the value of a modern colony to the mother-country (omitting, as before mentioned, the value of the patronage to those who confer places in the colonies, and the value of the places to those who receive them) is simply this: what advantage is this said colony to the productive classes of the country?—a question not always easy

to answer; but this is the question, the solution of which must decide whether a colony ought to be maintained or not, if we look only to the interests of the mother-country. If we look to the interests of the colony, it may be in many cases, and certainly is in some, the interest of the colony to remain as it now is, under the protection and sovereign authority of the mother-country; for it is protected at little or no cost to itself, and it often gets commercial advantages which, if the relationship to the mother-country were to cease, would cease with it. But again the question recurs, what is the advantage to the mother-country? If some advantage cannot be shown, the maintenance of a useless colony is a pure act of national benevolence toward the colony and to those few of the mother-country who have places or property in it.

The colonial administration of the British colonies is an important department of the general administration. At the head of it is the principal colonial secretary. It may be said, without any risk of being contradicted by those who are best acquainted with the colonial administration and not interested in it, that it is the worst part of our public administration, and requires great improvement.

The word Colony is not applicable to all the foreign possessions of Great Britain. Gibraltar, Malta, and Heligoland may be more correctly termed Possessions; Port Essington, on the northern coast of Australia, is a Settlement; British India is a Dependency, and so likewise are the Channel Islands and the Isle of Man; Van Diemen's Land, New Zealand, &c. are Colonies. The seven Ionian Islands are under the protection of Great Britain. Tenasserim, Singapore, Penang, Malacca, Aden, and some other places, are Dependencies of the East India Company. The Chatham Islands are Dependencies of New Zealand, and Norfolk Island of Van Diemen's Land. In the British Colonies the waste lands belong to the British Crown, and they are now disposed of by sale only, under one tolerably uniform system.

I. *Date of Capture, Cession, or Settlement.*

Canada, capitulation, 18th Sept., 1759, and 8th Sept., 1760, and cession by treaty, 1763.
New Brunswick, Nova Scotia, Cape Breton, Prince Edward's Island, and Newfoundland—fisheries or settlements, established soon after their discovery in 1497.
Antigua, settlement, 1632.
Barbadoes, settlement, 1605.
Dominica and Grenada, ceded by France, 1763.
Jamaica, capitulation, 1655.
Montserrat, settlement, 1632.
Nevis, settlement, 1628.
St. Kitt's, settlement, 1623.
St. Lucia, capitulation, 22 June, 1803.
St. Vincent and Tobago, ceded by France, 1763.
Tortola and Anguilla, settlement, 1666.
Trinidad, capitulation, 18 Feb., 1797.
Bahamas, settlement, 1629.
Bermudas, settlement, 1629.
British Guiana, including Demerara, Essequibo, and Berbice, capitulation, Sept. 1803.
Honduras, treaty, 1670.
Gibraltar, capitulation, 4 Aug., 1704.
Malta and Gozo, capitulation, Sept. 1800.
Cape of Good Hope, capitulation, 10 Jan., 1806.
Sierra Leone, settlement, 1787.
Gambia, settlement, 1618.
Gold Coast, African Forts, 1618.
Ascension Island, taken possession of by permission of Spain, 1827.
Fernando Po, taken possession of, 1815.
Ceylon, capitulation, 17 Sept., 1795.
Mauritius, capitulation, 3 Dec., 1810.
New South Wales, settlement, 1787.
Van Diemen's Land, settlement, 1803.
Western Australia, settlement, 1829.
South Australia, settlement, 1834.
New Zealand, settlement, 1839.
Falkland Islands, taken possession of, 1833.
St. Helena, ceded by Holland, 1673.
Hong Kong, treaty, 1842.
Labuan, island, off the coast of Borneo, 1847.

The immense territory in North America which lies north of the British Colonies, and extends to the Pacific, where it is bordered on the northwest by the Russian possessions, and on the south by the territory of the United States, is administered by the Hudson's Bay Company under a charter. Another vast territory in North America lies between the Rocky Mountains and the Pacific; the boundary between the British possessions and the United States, west of the Rocky Mountains, is stated in BRITISH AMERICA.

II. *Population of the principal British Colonies in 1842, or according to the latest census.*

Eastern (Lower) Canada	678,590
Western (Upper) Canada	486,055
New Brunswick	156,142
N. Scotia and C. Breton	178,237
Prince Edward's Island	47,034
Newfoundland	75,094
Antigua	36,405
Barbadoes	122,198
Dominica	18,291
Grenada	29,650
Jamaica	377,433
Montserrat	7,119
Nevis	7,470
St. Kitt's	21,578
St. Lucia	21,001
St. Vincent	27,248
Tobago	13,208
Tortola	8,500
Anguilla	2,934
Trinidad	60,319
Bahamas	25,244
Bermudas	9,930
Demerara and Essequibo, and Berbice	102,354
Honduras	10,000
Gibraltar	11,318
Malta and Gozo	118,759
Cape of Good Hope	159,451
Sierra Leone	39,839
Gambia	4,495
Ceylon	1,421,631
Mauritius	174,699

New South Wales	130,856
Van Diemen's Land	50,216
Western Australia	3,476
South Australia	15,527
New Zealand	17,000
St. Helena	4,834

III. *Form of Government.*

By a Governor, Legislative Council, and Assembly:—Canada, New Brunswick, N. Scotia and C. Breton, Prince Edward's Island, Antigua, Barbadoes, Dominica, Grenada, Jamaica, Montserrat, Nevis, St. Kitts, St. Vincent, Tobago, Tortola, Anguilla, Bahamas, Bermudas.

By a Governor and Legislative Council:—New South Wales, Van Diemen's Land.

By a Governor and Executive Council, and Orders of Queen in Council:—St. Lucia, Trinidad, British Guiana, consisting of Demerara, Essequibo, and Berbice; Gibraltar, Malta and Gozo, Cape of Good Hope, Ceylon, Mauritius, Hong Kong.

By a Governor and Executive Council, and British Acts of Parliament:—Sierra Leone, Gambia, Gold Coast, Western Australia, South Australia, New Zealand, Falkland Islands, St. Helena.

By a Superintendent and Magistrates:—Honduras, &c.

The mother-country does not levy taxes or duties in any colonies except for their use; but the colonies do not usually defray all the cost of their own establishments, and the sum of about 400,000*l.* a year is annually voted by parliament for colonial establishments. The colonial revenues are expended in salaries, and in maintaining establishments which are often not only expensive, but sometimes nearly useless. The charges of collecting colonial revenues are frequently greater than the produce of the revenue. The sum of 166,067*l.* of the public money was voted by parliament in 1838 for religious establishments in the colonies: of this sum 134,450*l.* was for the established church; church of Scotland, 9967*l.*; Roman Catholic church, 14,763*l.*; Dutch church, 6886*l.*; besides 2175*l.* to Jews, Baptists, and Wesleyans, for religious purposes. But it is the drain upon the military resources of the mother-country which renders the British colonies so heavy a burden. From 1839 to 1843 inclusive, the charges incurred on account of Canada in respect of the army, navy, ordnance, and commissariat was 5,532,957*l.* (Parl. Paper, 304 Sess. 1844.)

COLOQUINTIDA. [Cucumis Colocynthis.]

COLOPHONIA, a genus of plants belonging to the natural order *Burseraceæ*. It is to a genus thus defined that De Candolle refers the tree producing the *Bois de Colophone* of the Isle of France, and calls it *C. Mauritiana*. In his description of the tree, he says the fruit is unknown. The bark of *Canarium commune* yields a limpid oil, which has a pungent turpentine smell, and congeals into a buttery camphoraceous substance. It possesses the same properties as Copaiba. The same tree is also said to yield East Indian Elemi. It is a native of the continent of India, and of the islands of the Eastern Archipelago.

COLORA'DO, a river of California, takes its rise in the Sierra Verde, one of the great ramifications into which the Rocky Mountains diverge after they enter the territory of Mexico, between 41° and 42° N. lat. For a long way from its source it has the name of San-Rafael; then it is called Zuguanaras, until it receives the Yaquesila; from this point to its entrance into the northern extremity of the Gulf of California, about 32° N. lat., it is known as the Colorado. The affluents on the left bank are—the San Xavier, the Nabajoa, and the Yaquesila, which flow westward from Sierra de Anahuac; and the Gila, which flowing westwards from the Sierra de *los* Mimbres enters the Colorado about 50 miles from its mouth. The feeders from the right bank (if any) are unknown. In the lower part of its course, the country traversed by this river is stated to be a sandy desert subject to excessive heat, the thermometer rising to 140° in some places. The upper course of the river is very imperfectly known. The whole length of the Colorado is stated to be 640 miles; it is said also to be shallow, and not much over 200 yards wide. Two low islands at its mouth are called by Hardy Montagu Island and Gore Island. (Humboldt; Hardy; Dr. Coulter, in *London Geogr. Journal*, vol. v.)

COLOSSEUM. [Amphitheatre.]

COLOSSIANS, EPISTLE TO THE, a canonical epistle of the New Testament, addressed by St. Paul to the Christians of Colossæ, a city of Phrygia. The date generally assigned to this epistle by the commentators and critics is A.D. 62. The chief object of St. Paul in this epistle appears to have been to exhort the Christians of Colossæ to adhere steadfastly to the doctrines which he taught, and to reject the opinions of the Jews and the Pagan philosophers.

COLOUR, ACCIDENTAL. [Accidental Colour.]

COLOURS. [Refraction.]

COLOURS. [Banner.]

COLOURS, COMPLEMENTARY, are such as being blended together give rise to the perception of whiteness.

Sir Isaac Newton, having, in a dark room, received upon a glass prism a pencil of light from the sun, intercepted the refracted pencil by a glass lens; then on placing a screen of white paper, at first immediately beyond the lens, he observed that the solar image was strongly tinted with all the prismatic colours, violet, indigo, blue, green, yellow, orange, and red. [Dispersion.] On removing the screen farther from the lens, the different bands of colour approached towards the axis of the latter; and at the focus of the lens, by the complete mixture of the colours, a white spot was formed. Afterwards, on intercepting at the surface of the lens the violet, blue, and green rays, the spot on the screen ceased to be white, and assumed a colour compounded of the yellow, orange, and red rays which remained. Again, on intercepting the red and violet rays, the colour became compounded of the remaining rays, yellow, green, and blue, and so on.

Thus, if a tint complementary to any one of the

seven prismatic colours were required, so that by the mixture of the two a perfect whiteness might be produced, that tint should be compounded of the six which remain when the given colour is removed; but a degree of whiteness which approaches as near the perfect state as may be in general necessary is obtained by the mixture of blue, yellow, and red; and consequently a colour complementary to one of those may be produced by the mixture of the two others merely. The colour complementary to red is therefore a green composed of yellow and blue; that which is complementary to orange (a mixture of red and yellow) is blue; the colour complementary to yellow is violet, which is compounded of red and blue, &c.

COLOURS OF PLATES are those variously tinted rings or bands which appear when light is transmitted through or reflected from the surfaces of a lamina formed of any transparent medium. When the laminæ are extremely attenuated, the colours are said to be those of 'Thin Plates;' if the thickness exceeds a tenth of an inch, they are designated the colours of 'Thick Plates:' and when between two plates of glass there is interposed a film of some liquid, the colours are called those of 'Mixed Plates.'

The colours of thin plates were first examined by Sir Isaac Newton.

Newton also examined and described the phenomena of the coloured rings or bands between lenses when the light is transmitted through the latter. These rings are less bright than those which are formed by reflection; but when the obliquity of the transmitted rays to the plane of the rings is considerable they are sufficiently distinct: in the centre is a white spot, and the colours of all the rings are exactly complemental to those of the corresponding rings which are seen by the reflected rays. Newton's arrangement of the coloured tints in the first and second rings or bands, reckoning from the centre, is given in the following table, with the thicknesses of the plates of air, water, and glass, at the places where the tints are produced. The unit of measure is one-millionth part of an inch.

Reflected Tints.	Transmitted Tints.	Air.	Water.	Glass.
First Band.				
Very black	...	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{10}{51}$
Black	White	1	$\frac{3}{4}$	$\frac{20}{51}$
Nearly black	...	2	$1\frac{1}{2}$	$1\frac{2}{3}$
Blue	Yellowish red	$2\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{11}{20}$
White	Black	$5\frac{1}{4}$	$3\frac{7}{8}$	$3\frac{2}{3}$
Yellow	Violet	$7\frac{1}{3}$	$5\frac{1}{3}$	$4\frac{3}{5}$
Orange	...	8	6	$5\frac{1}{8}$
Red	Blue	9	$6\frac{3}{4}$	$5\frac{3}{4}$
Second Band.				
Violet	White	$11\frac{1}{3}$	$8\frac{3}{8}$	$7\frac{1}{3}$
Indigo	...	$12\frac{2}{3}$	$9\frac{3}{8}$	$8\frac{2}{11}$
Blue	Yellow	14	$10\frac{1}{4}$	9
Green	Red	$15\frac{1}{3}$	$11\frac{1}{3}$	$9\frac{9}{7}$
Yellow	Violet	$16\frac{2}{3}$	$12\frac{1}{3}$	$10\frac{2}{3}$
Orange	...	$17\frac{2}{3}$	13	$11\frac{1}{3}$
Bright red	Blue	$18\frac{1}{3}$	$13\frac{3}{4}$	$11\frac{5}{8}$
Scarlet	...	$19\frac{2}{3}$	$14\frac{1}{4}$	$12\frac{2}{3}$

This table, extended so as to include the seventh band of reflected tints, constitutes that which is called Newton's Scale of Colours.

It was to explain the phenomena of coloured rings or bands that Newton proposed the hypothesis of 'Fits of Easy Reflexion and Transmission' [UNDULATORY THEORY OF LIGHT], and on that hypothesis the phenomena may be very satisfactorily accounted for.

The subject has been pursued by Sir D. Brewster, Sir John Herschel, Dr. A. Young, and Professor Airy.

COLQUHOUN, PATRICK, a statist and political economist, was born at Dumbarton, on the 14th of March, 1745. After receiving a scanty education, he went to Virginia, and on his return resided for some time in Glasgow, where he promoted the establishment of the Exchange and other institutions, and is said to have greatly aided the progress of the muslin trade in that town. In 1789 he settled in London, where he directed his attention to the police systems of the metropolis. He was one of the three stipendiary justices of peace appointed in 1792. In 1796 he published his well-known work, 'A Treatise on the Police of the Metropolis, explaining the various Crimes and Misdemeanours which at present are felt as a pressure on the Community, and suggesting Remedies.' Although changes both in the police regulations and the state of society have superseded the information contained in this work, it is still frequently referred to. In 1800 he drew, with the assistance of Bentham, of whom he was a valued friend, the Thames Police Act, 40 Geo. III. c. 87. In the same year he published 'A Treatise on the Commerce and Police of the River Thames; containing an Historical View of the Trade of the Port of London, and suggesting means of preventing the Depredations thereon, by a legislative System of River Police.' Mr. Colquhoun was a great promoter of the system of charity-schools, holding the opinion, which is every day obtaining additional adherents, that the education of the people is the main protection of society from those social evils which penal legislation can but partially cure when they have broken out. He died April 25, 1820.

COLTSFOOT, [TUSSILAGO.]

CO'LUBER (Linnæus), an extensive genus of venomous or non-venomous serpents, with a double range of scales beneath the tail. This genus constitutes the family *Colubridæ* of most modern zoologists. Mr. Gray, in his synopsis, 1825, divided the Colubridæ into two groups, one with the mouth furnished with poison fangs, and the other without fangs. In Griffith's Cuvier, 1831, Mr. Gray modified that arrangement: he there divides the serpents into two groups, venomous and non-venomous, and places the *Colubridæ* among the latter. Indeed, as must be very palpable, a family composed of venomous and non-venomous snakes cannot be natural. The common Ringed Snake (*Natrix torquata*, Ray; *Tropidonotus natrix*, Kuhl.; *Coluber natrix*, Linn.) may be regarded as a type of the family. [NATRIX.]

COLUMBA, commonly called the Apostle of the Highlanders, or Scoto-Irish, is known in history as the founder of the abbey and college of

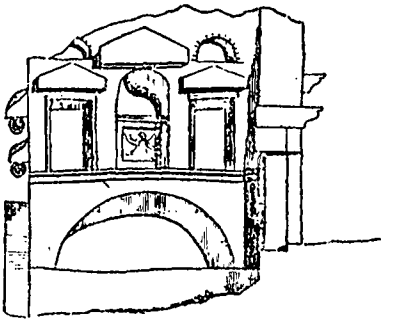
Iona in the Western Isles of Scotland. He was a native of Ireland, and is said to have been born in the year 521. According to the best collations of recent investigators, he arrived in Scotland in the year 563. The island of Hi, or Iona, is presumed to have been a seat of the pagan worship of the day, and it is probable that Columba desired to attack the lion in his den. The greater part of the neighbouring west coast of Scotland was peopled by the Scots, who had emigrated from Ireland; the districts south of Iona, and the broad tracts of comparatively level land stretching eastward, were inhabited by the people called Picts. Columba is said to have established an equal influence with both races. The life of Columba by Adamnan is a work frequently consulted by investigators into the early history of Christianity in Britain. A translation of this work, with critical comments, was published in 1798, with the title 'The Life of St. Columba, the Apostle and Patron Saint of the ancient Scots and Picts,' by John Smith, D.D., a work full of very absurd blunders. Adamnan's Life contains few biographical facts which can be depended on, but it is a very curious memorial of the manners of the day. Columba is said to have died in the year 597.

COLUMBA. [COLUMBIDÆ.]

COLUMBA NO'ACHI (Constellation), the *Dove of Noah*, a constellation formed by Halley, close to the hinder feet of Canis Major.

COLUMBA'RIUM, a place of sepulture used for the ashes of the Romans, after the custom of burning the dead had been introduced among them. The word columbarium signifies a dovecote; and its application to the Roman places of interment has arisen from the resemblance between the small arched holes which contain the sepulchral urns, called ollæ, and the recesses formed for the doves in a dovecote.

In the Villa Doria Pamfili at Rome was discovered, some years since, a very extensive columbarium, or rather an assemblage of columbaria.



Section of a Columbarium

COLUMBIA, DISTRICT OF, is a portion of territory appropriated to the general government of the United States of North America. The district was formerly 10 miles square, or 100 square miles, lying on both sides of the Potomac, and was ceded to the Federal government in 1790 by the States of Virginia and Maryland. Besides the city of WASHINGTON, the seat of Congress, and residence of the President and other chief officers of the United States, it contained the cities of Alexandria and Georgetown, and had, in 1840, a population of 43,712, of whom 30,657 were whites, 8631 were free-coloured persons, and 4694 were slaves.

By an act of congress in 1846, the county and city of Alexandria were restored to the State of Virginia, and the district is now confined to the Maryland side of the Potomac, and contains about 64 square miles. The population of the district, within the present limits, has not yet been stated. It is under the immediate government of congress. The tides of the Atlantic ascend the Potomac as far as Georgetown, which is on the north-east bank of the river, 2 miles W. from Washington, and about 200 miles from the mouth of the river. Vessels of large size ascend the river to the United States' Navy-yard at Washington. At Alexandria, 6 miles below Washington, the river is a mile wide and 30 or 40 feet deep. Georgetown contained, in 1840, a population of 7312, and the shipping of the port amounted to 9,964 tons. The town is pleasantly situated, and is separated from Washington by Rock Creek, over which there are two bridges. It contains many handsome buildings; a market-house; 7 churches; a Roman Catholic College, which had, in 1846, 15 instructors, 90 alumni, 140 students, and a library of 25,000 volumes; and a nunnery called the Convent of Visitation, which contains from 60 to 70 nuns, attached to which is an academy, which generally contains about 100 young ladies, who are instructed by the nuns. The Chesapeake and Ohio Canal commences at Georgetown: it is designed to extend to the river Ohio, and has been continued to Alexandria.

(Haskel and Smith, *United States' Gazetteer; American Almanac*, 1847.)

COLUMBIA. [CAROLINA, SOUTH.]

COLUMBIA RIVER. [OREGON.]

COLUM'BIDÆ, a natural family of birds, comprising the Pigeons, Doves, and Turtles.

Much doubt has prevailed relative to the proper situation of the pigeons in the arrangement of a system of ornithology. Some place them between the gallinaceous birds and the bustards; some between the *Passeres* and *Gallinæ;* some in the gallinaceous order. Cuvier and Vigors assign the latter situation to them; but De Blainville founds an order for their reception, termed *Sponsores* or *Les Columbins*, which he places between the *Saltatores* (*Passeres*) and the *Gradatores* (Pheasants and Partridges). The Prince of Musignano arranges them as the third and last section of Passeres, under the title of *Gyrantes*, in his 'Geographical and Comparative History of the Birds of Europe and North America;' but the same distinguished writer, in his 'Specchio Comparativo,' places the *Columbæ* as an order between the *Passeres* and the gallinaceous birds; and this we regard as their true position.

Unlike the gallinaceous birds, the pigeons mate, and form permanent attachments. The females lay only two eggs, generally in flat nests of sticks on

the branches of trees; some on the ledges of rocks. The young are long incapable of leaving the nest, and are at first fed with a milky secretion, produced by certain glands, on the inner surface of the crop of both parents, and which soon passes into a curdled state. About the third or fourth day grain moistened and warmed in the crop of the parents begins to be added. The hind toe is on the same level as the others, though the feet are not firm graspers; in fact, in habits, manners, instinct, voice, and mode of flight, these birds are essentially distinct from the gallinaceous birds, and equally so from all the *Passeres*.

The genera are extremely numerous, and most extensively distributed; in fact, excepting in the frigid zones, the *Columbidæ* are spread universally, but the species are most numerous in Southern Asia and the Indian Archipelago.

In all, the bill is moderate, and covered at the base of the upper mandible with a soft elevated skin, in which the nostrils are situated; the tip is more or less curved down.

Though the *Columbidæ*, as a whole, may be regarded as arboreal in their habits, some species depart from the rule, and are almost exclusively terrestrial, and even breed on the ground, the female, as it is asserted, laying several eggs; while the young, like those of gallinaceous birds, are able after exclusion from the egg to run about, and follow the parent, which broods over and attends them like the partridge or fowl. Such is the *Geophilus carunculatus* of South Africa. Here then we find an approximation towards the gallinaceous birds; and one not altogether to cause surprise, when we consider that this group of birds leads off from the *Passeres* to the Gallinaceous order, assuming, as is the general opinion, an intermediate station. It may therefore, we repeat, be expected that some of the *ground doves* will be found to resemble the latter in habits and manners; yet with the exception of the *Geophilus carunculatus*, or *Colombe-Gallinè* of Le Vaillant, we know of no species which lays more than two eggs.

The genera into which the *Columbidæ* are divided are very numerous. Mr. Selby, in the 'Naturalists' Library' (1835), thus speaks of their classification:—'Of the sub-families, or five typical forms of the *Columbidæ*, we can only speak with diffidence and uncertainty, as no analysis of the species sufficiently strict or extensive has hitherto been instituted, whence conclusive deductions can be drawn. We shall only cursorily observe that the arboreal pigeons, embracing *Vinago*, Swainson's genus *Ptilinopus*, our genus *Carpophaga*, and some other undefined groups, with feet expressly formed for perching and grasping, and through which from their habits and form the necessary connection with the insessorial order (*Passeres*) is supported, are likely to constitute *one;* the true pigeons, of which our ring-pigeon and common pigeon may be considered typical, a *second;* the turtles and their allies, with feet of different proportions from the preceding, and graduated tails, a *third;* the ground pigeons, or Columbe-Gallines of the French naturalists, a *fourth;* and the *fifth* is not unlikely to be represented by Vieillot's genus *Lophyrus*, in which the deviation from the proper columbine form is not to that of the typical *Rasores*, but to the *Cracidæ* (Curassows) placed at the farther extremity.' Mr. Selby, it may be observed, regards the *Columbidæ* as within the pale of the *Rasores*, or Grallatorial order, thus far agreeing with Cuvier, Vigors, and others.

The following are the principal genera into which the *Columbidæ* are divided:—

Group 1. *Vinago*.—Locality, Asia and Africa.—Example, the Aromatic Vinago (*V. aromatica*); India, Java, &c.

Ptilinopus (Swainson).—Locality, the Moluccas, Celebes, and other islands of the Pacific.—Example, the Manasope (*Pt. cyano-virens*); New Guinea.

Carpophaga (Selby).—Locality, India, Moluccas, Celebes, Australia, and the Pacific Isles.—Example, the Nutmeg-Pigeon (*C. ænea*); Moluccas, New Guinea, &c.; and the Oceanic Fruit-Pigeon (*C. oceanica*); Isle of Oulan, Caroline Islands, &c.

Group 2. *Columba*.—Locality, Europe, Asia, Africa.—Examples, the Wood-Pigeon (*C. œnas*); the Ring-Dove, Cushat, or Queest (*C. palumbus*); the Rock-Dove, the origin of our domestic varie-

Rock-Dove (*Columba livia*).

ties (*C. livia*); Europe, Asia, Africa. The Chestnut Pigeon (*C. spadicea*); New Zealand.

Group 3. *Turtur*.—Locality, Europe, Asia, Africa.—Examples, the Common Turtle (*Turtur communis*), and the Collared Turtle of India, Western Asia, and Africa (*C. risorius*).

Ectopistes.—Locality, America, Africa, Australia.—Example, the Passenger Pigeon of North America (*E. migratoria*).

Group 4. *Phaps* (Selby).—Locality, Australia, and islands in the Pacific.—Example, the Bronze-Winged Ground-Dove of Australia (*Ph. chaleoptera*).

Chamæpelia.—Locality, South America.—Example, the Talpicoti (*Ch. Talpicoti*); Brazil, Paraguay.

Peristera.—Locality, South Africa.—Example, *Peristera tympanistria*.

Collared Turtle (*Turtur risorius*).

Geophilus (Selby).—Locality, Nicobar, West Indies, Africa.—Example, the Colombe-Galline (*Geophilus carunculatus*); South Africa. The Nicobar Pigeon (*G. Nicobaricus*); Nicobar, Java, Sumatra, and many of the Moluccas.

Group 5. *Lophyrus* (Vieillot).—Locality, Java, Banda, New Guinea, Moluccas.—Examples, the Great Crowned Pigeon (*L. coronatus*), and the Victoria Crowned Pigeon of New Guinea (*L. Victoria*, Fraser, 1844).

FOSSIL COLUMBIDÆ. Dr. Buckland enumerates the bones of a species of pigeon among the remains collected in the cave of Kirkdale.

COLUMBINE. [AQUILEGIA.]

COLU'MBIUM, a metal discovered in 1801 by Mr. Hatchett in a ferruginous mineral from North America. It is a black powder, which by the burnisher acquires the colour and lustre of iron. The specific gravity is about 6. It is nearly insoluble in acids and in chlorine. When heated in the air, it is oxidised, and converted into columbic acid. Its atomic number is about 185.

Oxygen and *Columbium* combine in two proportions. The compound ($Col^1 O^3$) *columbic acid* is a colourless insipid substance, which unites with bases to form salt *columbates*, few of which have been examined. The *oxide* ($Col^1 O^2$) is of a grayish black colour, very hard, and almost infusible. Very few of the compounds of columbium with other bodies have been yet examined to any considerable extent.

COLUMBUS (a name latinised from the Italian Colombo, and the Spanish Colon) was born at Genoa, about the year 1445 or 1446. His father, who was a wool-comber, sent him to Pavia; but Columbus, having shown a taste for geometry, geography, and astronomy, or as it was then termed, astrology, went to sea at fourteen years of age. In February 1467, Columbus, in order to ascertain whether Iceland was inhabited, advanced 100 leagues beyond it, and was astonished at not finding the sea frozen. He also visited the Portuguese fort of St. George la Mina, on the coast of Guinea.

About the year 1470 he settled at Lisbon, then the great resort of travellers and navigators, whom Prince Henry highly encouraged. Here Columbus married the daughter of an Italian, called Pates-trello, who had colonised and who governed the island of Porto Santo, and whose papers, charts, and journals were highly serviceable to Columbus.

Columbus resided also some time at the island of Porto Santo, which had not long been discovered, a circumstance which, at a period of great excitement and expectation as to maritime discovery, kindled his mind to enthusiasm. Moreover the legends of the island of Cipango (Japan), of Mango (Southern China), and Cathay, the opinions of the ancients, the travels of the moderns, the conjectured sphericity of the earth, its supposed smallness, and the imaginary prolongation of Asia to the east, all this presumptive evidence gave him so firm a conviction of the practicability of crossing the Atlantic, and of landing on the eastern shores of Asia, that, after long delays, and repeated disappointments and struggles with poverty, he never made any abatement in those conditions which appeared to all the states to whom he made proposals to be the extravagant demands of a mere adventurer. John II. of Portugal, after having referred the project to a maritime junto, sent a caravel under the pretext of taking provisions to the Cape Verd Islands, but with secret instructions to try the route marked in the papers of Columbus. The pilots however, losing all courage, put back to Lisbon, and ridiculed the scheme. Indignant at such duplicity, Columbus sought patronage elsewhere, and sent his brother Bartholomew to make proposals to Henry VII. of England.

In 1484 Columbus arrived at Palos de Moguer in Andalucia. Stopping one day at the Franciscan convent of La Rabida to beg some bread and water for his child, the guardian or superior, Juan Perez Marchena, was so struck with the grandeur of his views, that he detained him as a guest, and ultimately gave him a letter of introduction to the confessor of Isabella, Fernando de Talavera. After long waiting and many disappointments, stipulations were at last signed by Ferdinand and Isabella, at Granada, April 17, 1492.

On Friday, August 3, 1492, Columbus, as admiral of the seas and lands which he expected to discover, set sail from the bar of Saltes, near Palos, with three vessels and 120 men, who were full of doubts and fears, and were partly pressed into the service. With great difficulty he succeeded in inducing his crew to persevere through a tedious voyage, till on Oct. 11, 1492, the manifestations of land were such as to convince the most dejected. Accordingly, after the evening prayer, Columbus ordered a careful look-out, and himself remained on the high stern of his vessel from ten o'clock, when he had observed glimmerings of light, as he supposed on shore, till two in the morning, when the foremost vessel fired a gun as a signal of land having been discovered. Not an eye was closed that night, and on Oct. 12, with tears of joy, after fervid thanksgivings, Columbus kissed the earth on which he landed, and with great solemnity planted the cross in the new

world, at Guanahani, or San Salvador, one of the Gucayos, Lucayhan, or Bahama Islands. Those who had lately been most in despair were now the most extravagant in their joy.

On the 24th Columbus set out in quest of gold and Cipango (Japan). After discovering Concepcion, Exuma, and Isla Larga, Cuba broke upon him like an elysium; he no longer doubted that this beautiful land was the real Cipango. When this delusion was over, he fancied Cuba, which to the time of his death he took for part of the main land of India, to be not far from Mango and Cathay. He next took Hayti, or Santo Domingo, for the ancient Ophir, the source of the riches of Solomon, but he gave it the Latin diminutive of Hispaniola, from its resembling the fairest tracts of Spain. Leaving here the germ of a future colony, he set sail homeward January 4, 1493. After weathering a dreadful storm, he at last landed triumphantly at Palos, March 15, 1493. He proceeded to Barcelona, where Ferdinand and Isabella received him seated in state, rose as he approached, raised him as he kneeled to kiss their hands, and ordered him to be seated in their presence.

On September 25, 1493, Columbus left Cadiz on a second expedition, with seventeen ships and 1500 men. He discovered the Caribbee Islands, Puerto Rico, and Jamaica; and after repeated mutinies of his colonists, and great hardships, he returned against the trade-winds to Cadiz, June 11, 1496. Having dispelled all the calumnies that had been accumulated upon him, Columbus embarked on May 30, 1498, at San Lucar de Barrameda, on a third expedition, with only six vessels. In this voyage he discovered Trinidad, the mouths of the Orinoco, the coast of Paria, and the Margarita and Cubagua Islands. On Aug. 14 he bore away for Hispaniola to recruit his health. While here the intrigues of his enemies induced Ferdinand, in July 1500, to despatch Francisco Bovadilla to supersede Columbus, and bring him back in chains. Vallejo, the officer who had him in charge, would have taken his chains off; but Columbus proudly refused. The general burst of indignation at Cadiz, which was echoed throughout Spain, on the arrival of Columbus in fetters, compelled Ferdinand himself to disclaim all knowledge of the shameful transaction. With restricted powers and a broken frame, but with his ever-soaring and irrepressible enthusiasm, Columbus sailed from Cadiz again on May 9, 1502, with four caravels and 150 men, in search of a passage to the East Indies near the Isthmus of Darien, which should supersede that of Vasco de Gama. The mutiny of his crew compelled him to return to Hispaniola after coasting the Mosquito Coast, Costa Rica, and Veragua to the point called El Retrete. He reached Santo Domingo Aug. 13, 1503. Sailing homewards on September 12, he anchored his tempest-tossed and shattered bark at San Lucar on November 7, 1504. From San Lucar he proceeded to Sevilla, where he soon after received the news of the death of his patroness Isabella. He was detained by illness till the spring of 1505, when he arrived at Segovia, to have only another courtly denial of redress, and to linger a year longer in neglect, poverty, and pain, till death gave him relief at Valladolid on the 20th of May, 1506.

The following are a few of the principal authorities for the Life of Columbus:—'Navigatione del Re di Castiglia delle Isole e Paesi nuovamente ritrovati,' and the Latin translation, 'Navigatio Christophori Colombi,' Vicenza, 1507; Life of the Admiral, by his son Fernando, Oviedo; Manuscript History of Fernando and Isabella, by the Curate of Los Palacros; Manuscript History of the Indies, by Las Casas; Robertson's 'America;' 'Relacion de los Quatro Viajes de Cristobal Colon;' Irving's 'Life of Columbus.'

COLUMBUS. [OHIO.]

COLUMELLA, LU'CIUS JU'NIUS MODERA'TUS, if not himself a native of Gades (Cadiz), sprung from a family belonging to that town, which had been long most intimately connected with Rome. In several parts of his work he speaks of a paternal uncle, Marcus Columella, who had lived in Bætica (Andalucia), and had been well known as an intelligent agriculturist. The author himself possessed an estate in the country of the Ceretani (La Cerdaña), near the Pyrenees, where he was eminently successful in the growth of the vine. When he wrote his work, he appears to have been residing either at Rome or in the neighbourhood. The period at which he lived and wrote may be most safely deduced from his own writings, which show that he was born about the beginning of the Christian æra.

The work of Columella is addressed to Publius Silvinus, and consists of twelve books: the two first on the choice of a farm and farm-house, the selection of slaves, the cultivation of arable and pasture land; the three next on the cultivation of the vine, olive, and fruits of the orchard, &c.; the sixth and seventh, on the ox, horse, mule, ass, sheep, goat, and dog, that is, the shepherd's dog, and the house dog, for he specially excludes the sporting dog, as interfering with, instead of promoting, the economic management of a farm. The eighth book treats of the poultry-yard; and the ninth, of bees. The next, which has for its subject the vegetable and flower garden, is in verse. In the eleventh book the author again writes in prose, and gives, in three long chapters, the duties of a bailiff, a farmer's almanack, and the vegetable garden; this book is sometimes entitled the 'Bailiff' (Villicus). The last book bears the name of the 'Bailiff's Wife' (Villica), and treats of the indoor duties, the making wine and vinegar, preserving fruits, &c.

Columella has made free use of the Roman writers on agriculture who preceded him. Among these were Cato the Censor, Terentius Varro, his own contemporaries, and Cornelius Celsus and Julius Atticus; and Julius Græcinus, the father of Agricola. But the author of whom he speaks in the highest terms is Mago the Carthaginian, whose work on agriculture, as he tells us, containing eight-and-twenty books, was translated from the Phœnician into Latin, under a special decree of the Roman senate. The Latinity of Columella has nearly all the purity of the Augustan age. Columella is often cited by Pliny the Elder in his

'Natural History,' but generally with an expression of dissent. He is also quoted by Vegetius and Palladius. But the treatise on agriculture by Palladius appears to have superseded Columella's work.

The writings of Columella have generally been published with the works of the other authors 'De Re Rustica.' The latest and best edition is by J. G. Schneider, 4 vols. 8vo., 1794–7. We are not acquainted with any English translation of Columella.

COLUME'LLA, the central part or axis in the theca of a moss, around which the spores are arranged without having any definite connection with it. Also the axis of any kind of fruit when separate from the carpels; in the latter case it is a hardened state of the growing point.

COLUMELLIA'CE, a diandrous order of monopetalous Exogens, consisting of a few South American and Mexican plants of no known use.

COLUMN, from the Latin *columna*. The column is a shaft of wood, stone, or iron, in the form of a truncated cone, a little swelled from the straight line at about one-third its height from the lower extremity: this swelling is called the éntasis. Columns are of various proportions and kinds: circular on the plan, and rarely polygonal. The Romans had five models of columns, which were called orders; but the Greeks, from whom the Romans appear to have derived their architecture, only three. The Egyptians used columns, but they were very different in their form and proportions from both the Roman and Greek examples. The application of columns in Greek and Roman architecture is fully detailed in the article CIVIL ARCHITECTURE. The following Table of Proportions will be useful to the professional student.

PROPORTIONS OF SOME OF THE COLUMNS EMPLOYED IN ANCIENT EDIFICES, WITH THE ENTABLATURE.

DORIC.

	Height of Column.		Diameter of Base.		Upper diameter of Shaft.		Height of Entablature.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Temple of Jupiter Olympius at Agrigentum	61	9	13	0	10	6	25	9.25
Ditto of Hercules at Agrigentum	33	25	7	0.5	4	10		
Ditto of Apollo Epicurius at Bassæ, near Phigalia	19	6.8	3	7.75	2	10.45	6	5.1
Ditto at Cadachio, in Corfu	11	3.25	2	0	1	6	3	10.75
Ditto of Minerva at Athens, called the Parthenon	31	4.9	6	1.8	4	9.75	10	10.56
Ditto of Theseus	18	7.18	3	8.4	2	6.63	6	5.9
Ditto at Corinth	23	8½	2	5.10	4	4.10		
Doric Portico at Athens (Stuart's 'Athens')	26	2.5	4	4.05	3	4.6	7	4.58
Trajan's column, Roman Doric	97	9.1	12	2.2	10	8.8		
Antonine column, ditto	97	3.1	13	1.9	12	1.1		
Temple of Jupiter Panhellenius, in Ægina	17	4.25	3	2.6	2	4.65	6	10.05
Ditto of Minerva at Sunium	19	9.15	3	4.3	2	6.65	6	6
Ditto of Jupiter Nemeæus between Argos and Corinth	33	11.2	5	2.5	4	3	8	1.85
Propylæa at Eleusis			5	0.4	3	10.98	9	5.15
Temple of Ceres at Eleusis			6	6.27	5	4	12	8.96
Ditto of Diana Propylæa at Eleusis			2	7	2	0.75	5	0.74
Ditto of Nemesis at Rhamnus	18	5.45	2	4.8	1	10		
							including cymatium.	

IONIC.

	Height of Column.		Base of Shaft.		Upper diameter of Shaft.		Height of Entablature.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Temple of Apollo Epicurius at Bassæ			2	1.9	1	9.4	3	9.31
Ditto of Erectheus, Athens	21	7.50	2	3.8	1	11.2	4	11.25
Aqueduct of Hadrian	19	1.95	2	2.35	1	11.1	4	2.90
Temple on the Ilissus	14	8.3	1	9.4	1	6.2	3	7.28
Temple of Fortuna Virilis at Rome	27	0	3	2	2	8	6	8.6
							Architrave.	
Temple of Bacchus at Teos			3	3.6	3	1.8	2	5.4
Minerva Polias at Priene			4	2.8	3	6.4		
Apollo Didymæus near Miletus			6	3.2	5	5.8	3	5.2
Propylæa at Eleusis			3	4.6	2	9.24		

CORINTHIAN.

	Height of Column.	Diameter of Base.	Upper diameter of Shaft.	Height of Entablature.
	ft. in.	ft. in.	ft. in.	ft. in.
Incantada at Salonica	23 8.6	2 5.9		5 7.75
Temple of the Winds (without base)	13 6.85	1 7.4		
Monument of Lysicrates at Athens	11 7.65	1 2	0 11.65	2 8.22
Stoa, or Portico, at Athens	28 0.53	2 11.3	2 6.65	5 6.8
Arch of Trajan, Ancona	23 2.7	2 4.25	2 0.25	5 6.3
Ditto of Constantine	27 4.1	2 11.2	2 9	7 1.8
Portico of Pantheon at Rome	46 5.2	4 10.4	4 3.5	10 11.6
Interior of the Pantheon at Rome	34 10.4	3 8.2	3 2.3	8 2.9
Temple of Antoninus and Faustina	46 7.7	4 10.3	4 2.8	10 9.1
Ditto of Vesta at Tivoli	23 6	2 5	2 1.8	4 3
				Architrave.
Ditto of Jupiter Tonans	46 6.2	4 8.3	3 11.4	10 0
Ditto of Jupiter Stator	48 4.9	4 10.2	4 2.5	12 10.1
Ditto of Vesta at Rome	34 7.2	3 2.5	2 8.1	
Ditto at Jackly, near Mylasa, in Asia Minor, the supposed site of Labranda	27 2.8	2 10.35	2 3.6	5 6.6
Ditto of Mars Ultor at Rome	57 11	nearly 6ft.	5 1.6	3 10.5

COMPOSITE.

	Height of Column.	Diameter of Base.	Upper diameter of Shaft.	Height of Entablature.
	ft. in.	ft. in.	ft. in.	ft. in.
Arch of Titus	20 8.5	2 0.2	1 9.4	5 4.4
Septimius Severus	27 10.5	2 10.6	2 6.5	6 7

Vitruvius makes the height of the Doric (Roman) seven times the diameter; the Ionic, 8½; and the Corinthian, two-thirds higher than the Ionic, or nine diameters and one-sixth. The proportions of Palladio and Vignola differ; the latter are, we believe, preferred by the French school. See the Architecture of Palladio and Vignola. The proportions of the columns given above are from Stuart's 'Athens;' Taylor and Cressy's 'Rome;' 'Ionian Antiquities;' and 'Unedited Antiquities of Attica.'

In studying these works the student should be guided by the figures denoting the dimensions rather than by the outlines.

COLUMN, a body of troops consisting of one battalion or more, drawn up with the several divisions behind one another, so as to present a narrow front to the enemy: it is said to be in close or open order, according to the breadths of the intervals between the companies or battalions of which it is composed.

The armies of the Greeks and Romans may be said to have been generally formed in columns both for attack and defence. The troops having nothing to fear from a distant artillery, could, by such a disposition, most effectually overwhelm the enemy, or, if on the defensive, resist the shock of his assault: and even after the use of fire-arms was introduced in war, and the successes of Gustavus Adolphus had proved the advantages of a different order of battle, military men with difficulty overcame the prejudices which attached them to the practice of keeping the troops in dense array. The Chevalier Folard, in his 'Traité de la Colonne,' has urged in favour of a column that, besides its vast power both in making and resisting an attack, it may be quickly deployed and re-formed, and that it is capable of accommodating itself easily to any evolution which may be required. Such also are nearly the arguments used by Bulow and Jomini in favour of columns. The opinions of these tacticians are strengthened by the general practice of Napoleon, which was to concentrate a great body of troops opposite some one point of an enemy's line, and lead them to the attack. It must not however be forgotten that this method has not always succeeded; according to Rogniat, the defeat of the French at the battle of Esling was caused by the failure of an attack made in that manner against the centre of the Austrian line. In Spain, and on the field of Waterloo, their columns were invariably repelled by the firm resistance opposed to them by the British line of battle.

COLURES (*αἱ κόλουροι, colúri*). The term was originally applied to any great circles of the sphere passing through the poles, but came at last to mean only the circles which also pass through the equinoxes and the solstices, which are distinguished as the equinoctial and solstitial colures.

These terms are now of very little use, as the fact of a star being upon either circle is attended with no remarkable phenomenon.

COLURI, or KOLURI. [SALAMIS.]

COLUTE'A, a papilionaceous genus of exogenous plants, consisting of hardy shrubs. The species are all found in the south of Europe, in Palestine, and in the mountains of the Himalaya.

COMA, a Greek word (κῶμα) signifying profound sleep. Coma is a morbid condition of the brain, attended with loss of sensation and voluntary motion, the patient lying as if in deep sleep. It can scarcely be considered a primary or idiopathic disease; it is rather symptomatic of that condition of the brain which, when in sufficient intensity, produces apoplexy. If it be regarded as a positive disease, it must be considered as a milder form of apoplexy. It exists in different degrees of intensity; several of which degrees, as they are attended with some variety in the symptoms and are dependent on some modification of the pathological condition of the brain, so they have acquired distinct names. When there is a state of mental and physical torpor, indicated by an almost constant tendency to sleep, and great inaptitude for muscular exertion—when the patient is sensible only as long as he is strongly excited, and as soon as the external stimulus is withdrawn lapses into a state of forgetfulness, the affection is called Lethargy. When no distinct consciousness returns, however the patient may be roused or stimulated, though there still remains some indication of feeling on the application of mechanical irritation, as on being pricked or pinched, the affection is called Carus. But when the insensibility is so great that the patient indicates neither sensation nor feeling, whatever mechanical stimulus be applied, this state is often called, by way of eminence, Coma. This comatose state invariably accompanies apoplexy; and, as has been stated, coma, when intense, passes into apoplexy. [APOPLEXY.]

COMA BERENI'CES (Constellation), the *Hair of Berenice*, placed among the stars by the astronomer, Conon, in memory of Berenice, the wife of Ptolemæus Euérgetes (B.C. 246). The legend is, that she had dedicated this hair to Venus, in case of her husband's safe return from Asia, and that it disappeared from the temple in which it was placed, and was never seen again till found in the starry heavens, where it now is, close to the tail of the Lion, and passing the meridian about an hour before Arcturus. [BERENICE.] Geminus attributes the constellation to Callimachus, who mentions it, as do Catullus and Pliny. Ptolemæus does not place the stars now belonging to this constellation by themselves, but in the tail of the Lion; and Hyginus makes no separate mention of it. It was constantly mentioned by writers on the sphere, but not figured or catalogued separately, as far as we can find, till the time of Tycho Brahé.

COMARUM, a genus of plants belonging to the natural order *Rosaceæ*. There is only one species of this genus, *C. palustre*, Marsh Cinquefoil. This plant is a native of Great Britain. It is found in marshes and peaty bogs. The fruit is called in Scotland Cow-Berries. The root dyes wool of a dirty red colour, and possesses a sufficient amount of tannin to render them available for making leather.

COMA'TULA (Lamarck), *Alecto* (Leach), a genus of the class *Echinodermata* (Sea-Stars), placed by Cuvier immediately before the Encrinites. [ASTERIAS.] In Comatula the body is orbicular, depressed, and protected above by an assemblage of calcareous pieces; its circumference is surrounded by five rays, divided each into two or three long slender radii, each radius supporting two rows of jointed filaments. Mouth rather anterior, isolated, membranous, at the bottom of a star formed by five bifurcated channels. There is another orifice at the fringed extremity of a visceral sac. Body below almost entirely membranous. Besides the large fringed rays, there are one or two rows of simple auxiliary rays, jointed, and curved into a hook at the extremity; they probably enable the animal to creep along or anchor itself to rocks, while the others are used in drawing prey to the mouth. The sac which contains the viscera is in the centre of the great rays. For minute anatomical details see De Blainville's 'Actinologie.' Geographical distribution very extensive: species occur in the seas of Europe and in the southern ocean.

Example:—*Comatula Adeonæ*, Lamarck. Ten pinnated slender penniform rays; pinnules lanceolate, complicatedly canaliculate below. Dorsal cirrhi, or auxiliary rays, 20. Locality, the seas of New Holland, where Péron and Lesueur found it hooked on to an *Adeona* (a coralline).

COMB-CUTTING. The old method of forming the teeth of combs is by means of a double saw, which consists of two separate fine saws, placed parallel with each other, and adjusted to such a distance from each other as to embrace a tooth of the required fineness between them. These two saws are so arranged that, while one cuts into the comb to the full depth required, the other cuts only about half that depth, and by this contrivance the uniformity of the comb is secured, because, while the deeper saw is completing the first cut, the shallower one is forming the commencement of the second, and when, on the completion of the first cut, the deep saw is put into the second cut to complete it, the shallower one immediately commences a third. The cuts thus formed are subsequently enlarged and rendered smoother by means of a very thin wedge-shaped file, which also points the teeth. Though this method of comb-cutting is still practised, a much quicker mode of performing the same operations by means of circular saws and revolving cutters for pointing the teeth has been long in use.

By the above described modes of comb-cutting all the material of the interstices between the teeth is lost or destroyed, but by the operation known as the *parting* of combs such loss or waste of material may be avoided in the manufacture of combs of tortoiseshell, horn, or any other tough material. Two combs are, by this process, made out of one piece, the teeth of one being cut, by the pressure of chisel-like instruments, out of the interstices of the other.

(Descriptions of ingenious machines for this purpose are given in vol. xlix. of the *Transactions* of the Society of Arts; in Dr. Ure's *Dictionary of Arts;* and in Hebert's *Engineer's and Mechanic's Encyclopædia.*)

COMBINATION LAWS. The laws known by this name were repealed in 1824. Till then any combination of any two or more masters, or of any two or more workmen, to lower or raise wages, or to increase or diminish the number of hours of work, or quantity of work to be done, was punishable at common law as a misdemeanour; and there were also thirty-five statutes in existence, most of them applying to particular trades, prohibiting combinations of workmen against masters. The act passed in 1824 (5 Geo. IV. c. 95) repealed all the statute and common law against combinations of masters and of workmen, provided a summary mode of conviction, and a punishment not exceeding two months' imprisonment, for violent interference with workmen or masters, and for combinations for violent interference, and contained a proviso, with regard to combinations for violent interference, that no law in force with regard to them should be altered or affected by the act. But, all the common law against combinations being repealed by the act, this proviso was considered as of no force; and the act also went beyond the intentions of the framers in legalising combinations unattended with violence for the purpose of controlling masters in the mode of carrying on their trades and manufactures, as well as peaceable combinations to procure advance of wages or reduction of hours of work.

Immediately after the passing of this act a number of widely organised and formidable combinations arose in various trades and manufactures for the purpose of controlling the masters as to the way in which they should conduct their business; and the extent to which the act had repealed the common law being doubtful, and the act having clearly gone beyond the resolutions on which it was grounded in legalising combinations, the 6 Geo. IV. c. 129, was passed, which is the act now in force relative to combinations. This act repealed the 5 Geo. IV. c. 95, and all the statutes which that act had repealed. It relieved from all prosecution and punishment persons meeting solely to consult upon rate of wages or hours of work, or entering into any agreement, verbal or written, on these points. And it provided a punishment of not more than three months' imprisonment, with or without hard labour, for any one using violence or threats to make a workman leave his hiring, or return work unfinished, or refuse to accept work, or belong to any club, or contribute to any common fund, or pay any fine for not belonging to a club, or contributing to a common fund, or refusing to conform to any rules made for advance of wages or lessening of the hours of work, or regulations of the mode of carrying on any business, and for any one using violence to make any master alter his mode of carrying on his business. By the Act 6 Geo. IV. c. 129, therefore, combinations of masters and workmen to settle as to rate of wages and hours of labour are made legal: but the common law remains as it was as to combinations for otherwise controlling masters. By 9 Geo. IV. c. 31, assaults in pursuance of a combination to raise the rate of wages are made punishable by imprisonment and hard labour.

COMBINATIONS AND PERMUTATIONS. By the word combination is usually meant any selection which can be made out of a number of different objects without reference to the order in which they are placed: while by a permutation is meant a combination in which different orders of position are to be considered as constituting a specific difference. Thus *a b c d, a c b d, d a c b,* are all the same combination of four out of the alphabet, but different permutations of four. The investigation of questions relating to combinations, &c., is the principal mathematical part of the theory of probabilities, and was first considered in detail, with reference to that science, by James Bernoulli and Montmort (see 'Library of Useful Knowledge,' *Probability*): but the common rules had previously found their way into arithmetical treatises. The enormous number of different arrangements of which objects are susceptible, even when their number is not large, drew early attention to the subject.

COMBOURG. [Ille-et-Vilaine.]

COMBRAILLE, PAYS DE. [Auvergne.]

COMBRETA'CEÆ, an order of polypetalous exogens. They are tropical shrubs or trees. The order does not contain any plants of much importance for their useful properties.

COMBUSTION, a process in which both light and heat are emitted by chemical agency. When a piece of charcoal is ignited and put into oxygen gas, combustion commences and continues with increasing brilliancy until the charcoal disappears, or the oxygen has undergone a change which renders it incapable of further action as a supporter of combustion. This is an example in which a gas (carbonic acid) is the result of the combustion; but in other examples, such as burning iron in oxygen gas, a solid oxide is produced. *Ignition* differs from combustion in this, that the heated body gives out light and heat without undergoing decomposition. In all common cases of combustion, the heat which is generated by it is accompanied by flame, but not necessarily so. Some idea of the difference may be formed by observing the circumstances under which bituminous coal and anthracite burn; the former burns with flame, and the latter with scarcely any.

COMBUSTION, SPONTANEOUS HUMAN. This term is applied to a singular phenomenon which occasionally occurs in the human system. Many of the older medical writers spoke of a mysterious burning of the human body, which, as it seldom occurred, was generally doubted. Cases however of a consuming or decomposition of various parts of the body during life, with the evolution of light, have been constantly put on record, and, although often misrepresented by superstition and ignorance, the evidence of such a combustion of the human body is admitted as perfectly satisfactory by the best writers on medical jurisprudence of the present day.

The following conclusions may be deduced from the various cases which have been related:—

1. The subjects were nearly all females. Of seventeen cases collected by Kopps, sixteen were females. Eight cases mentioned by Lair are all of the same sex. They were far advanced in life.

2. Most of the individuals had for a long time been addicted to the use of ardent spirits, and they were either very fat or very lean.

3. The combustion occurred accidentally, and often from a slight cause, such as a candle, a coal, or even a spark.

4. The combustion proceeded with great rapidity, usually consuming the entire trunk, while the extremities, as the feet and hands, were occasionally left uninjured.

5. Water, instead of extinguishing the flames which proceeded from the parts on fire, sometimes gave them more activity.

6. The fire injured very slightly or not at all the combustible objects which were in contact with the human body at the moment when it was burning.

7. The combustion of these bodies left as a residuum fat fœtid ashes, with an unctuous, stinking, and very penetrating soot.

8. The combustions have occurred at all seasons, and in northern as well as southern countries.

These facts being admitted, the question arises as to what is the nature of the process by which this decomposition of the body has been effected? That it is not an ordinary combustion of the body from external agents is very evident. It must therefore arise from some change in the chemical composition of the body, which favours its combustion at a lower temperature than usually occurs at the surface of the earth. All union of carbon, hydrogen, sulphur, phosphorus, &c. with oxygen, is combustion. This is constantly going on in the lungs of all animals, and generating animal heat. The heat evolved in this process is not sufficient to produce light, but, if the temperature was exalted only a few degrees above that of the human body, it would be possible for light to be emitted; and this actually takes place in the burning of highly inflammable compounds, such as æther. There can, we think, be little doubt of the possibility of such a chemical composition of the blood and solids of the body taking place, under the influence of a stimulating compound containing the combustible elements carbon and hydrogen, which would under certain circumstances produce a slow combustion by contact with the oxygen of the atmosphere. Other theories have been advanced, such as the impregnation of the body with alcohol, electricity, or the generation of inflammable gases, such as sulphuretted and phosphoretted hydrogen, in the body.

COMEDY. [DRAMATIC ART AND LITERATURE.]

COME'NIUS, JOHN AMOS, was born in 1592, at Comna, in Moravia, from which place he assumed the name of Comenius. His parents were of the sect of Moravian Brethren. After studying at Herborn, he returned to Moravia and became pastor at Fulneck; but, that town being burnt during the religious war then raging, he took refuge at Lesna, in Poland, where he became rector of a Moravian school. He there published, in 1631, his 'Janua Linguarum,' in Bohemian and Latin. This work established his reputation as a philologist, and was translated into most European languages. An edition in Latin, English, and French, was published in London, 1639. It is a sort of encyclopædic phrase-book, in 100 chapters, every chapter being devoted to a separate department of natural history, the arts, or the various professions, sciences, and trades, &c., introducing most of the words belonging to each, and giving by means of the context an explanation of the same. His 'Orbis Sensualium Pictus,' &c. Latin and German, Nürnberg, 1659, is a vocabulary of technical words, likewise arranged in chapters, but not in connected sentences, each chapter being illustrated by a woodcut representing the objects mentioned in it. The 'Orbis' also has been often reprinted, and translated into various languages. A Latin and English edition appeared in London, 1777. Comenius came to England in 1638, and afterwards went to Sweden in 1642, where he was introduced to the Chancellor Oxenstiern; but he soon after left Sweden and retired to Elbing, where he attended chiefly to the publication of his works. He at last settled at Amsterdam, where he died in 1671. His numerous works are principally designed to facilitate teaching, and might even now furnish many useful suggestions for a system of elementary popular education.

COMET (*κομήτης*, from *κόμη, hair*). This term, though no doubt originally derived from the tailed comet of the heavens, yet was at one time pretty generally applied to phenomena of which it may be doubted whether many were any thing more than atmospheric meteors. Since the time when observation has shown comets without tails, the following must be considered as the definition of the word:—a heavenly body, of a luminous and nebulous appearance, which approaches to and recedes from the sun, after the manner of a planet, in a single revolution. This includes both the comets which return, and revolve in ellipses, and those which, for any thing established to the contrary, may move in hyperbolas or parabolas.

A fair average description of the phenomena of a visible comet is as follows:—

A faint luminous circle is discovered by aid of good telescopes; the appearance increases gradually, and after some little time a *nucleus* appears, that is, a part in the middle which is more condensed in its light than the rest, sometimes circular, sometimes oval, sometimes even radiated like a star. The appearance still goes on increasing, the nebula round the nucleus becomes less regular, and a tail begins to form, which looks as if one side of the nucleus were projected in a stream of light away from the body of the comet, which stream grows fainter as it recedes, and finally ceases without any definite boundary. This tail increases in length, so as sometimes to spread across the whole visible heaven: sometimes there are more tails than one, and sometimes the tail seems broken off in parts; it is generally turned directly away from the sun, but this rule is by no means universal. The comet approaches the sun sometimes in an undulating and irregular curve,

sometimes nearly in a straight line: it generally crosses the part of the heaven in which the sun is found so near to the latter body as to be lost in its rays, but emerges again on the other side usually with increased brilliancy and length of tail. The phenomena of disappearance are then, in the inverse order, the same as those of its appearance. Frequently it is observed that the dimensions of the comet contract a little as it approaches the sun, and dilate as it recedes again.

During such appearances, astronomical observation has always, for the last two centuries, confirmed the hypothesis that the irregularity in the motion of comets arises from their motion combined with that of the earth; and that their real path round the sun is either in a parabola (the infinitely elongated ellipse), or in an ellipse so elongated as to be insensibly different from a parabola within visible limits, or finally in a measurable ellipse, which, being an oval curve, ensures the periodic return of the luminary. In fact, the laws under which the orbit is described are precisely the same as those of the planets to the eye of reason, though the elongation of the orbits creates very different visible phenomena. But the stages of discovery were at considerable distances from each other as to time. Aristotle and his contemporaries supposed comets to be igneous vapours formed in the atmosphere. In his 'Meteorologica,' lib. i., he mentions various hypotheses about comets, and describes several remarkable phenomena of the kind. Ptolemæus does not mention the word in his Syntaxis; but in his astrological treatise he supposes them to be formed by the motion of the planets. The opinion of Seneca, that comets were a species of planets, was a bold and happy advance upon his age. Even Galileo and Francis Bacon were of the meteoric party; though Tycho Brahé had distinctly shown from observation that his comet [Brahe, Tycho] was above the moon in height. Both Tycho and Kepler supposed the orbits to be straight lines. Hevelius (1668) ascertained the concavity of a comet's orbit. Doerfel (1681) is believed to have been the first who laid down the parabolic hypothesis. The 'Principia' of Newton confirmed the physical part of this conjecture (in 1687), and the practical part with regard to the comet of 1680. Newton distinctly calls the old planets *planets without tails*. The well-known conjecture of Halley, obtained in 1700 from his calculations of 24 comets, with his prediction, and its subsequent verification, is treated under Halley's Comet. We may here also observe, that we shall refer the second and third periodic comet, as to all specific information, to Solar System. The steps which have been made in positive knowledge of the orbits of comets since Halley are closely connected with the planetary theory, and will be found in articles on that subject. The very large number of faint telescopic comets discovered within the last few years show what attention might probably have done at any time, and renders comets, as comets, comparatively uninteresting, except when their periods are found to be short.

The tail of a comet, supposing it to consist of matter like the gases on our earth (on which supposition every speculation must proceed), is a continual efflux from the body. It is impossible that a permanent atmosphere could be in equilibrium under such a form. The attraction of the body of the comet itself upon such an atmosphere must be exceedingly slight. Again, it is known from the old planets that, if space be filled with any fluid, such a fluid must be excessively rare and elastic, or it would show some effect in gradually causing the planets to approach the sun, and shortening the period of rotation. No such acceleration has been observed: not that small accelerations cannot be detected, for that of the moon, which depends on other causes, has been detected, though only amounting to a minute of space in six centuries. Nevertheless, just in the same way as the fall of a feather shows our atmosphere, though that of a bit of lead does not, it may happen that a fluid pervading all space, and so rare as not to affect the planets sensibly for many thousands of years, may soon show itself on such a mass as that of a comet. According to the observations of Encke, the comet which bears his name is gradually shortening its period, at the rate of something less than one day out of 2500, being precisely the sort of effect, and up to this time the only known sort of effect, which could result from a resisting medium. A translation of the memoir of Encke on this subject was published by Professor Airy in 1832, and both the author and translator declare themselves perfectly convinced that the resisting medium is established: M. Arago seems to be of the same opinion, as does M. Poisson.

It is most probable that a comet is altogether gaseous, without any solid matter whatever. Stars have been repeatedly seen through the thickest parts. Sir J. Herschel, for instance, in 1832, saw a group of stars of the sixteenth magnitude almost through the centre of Biela's comet. We shall on this subject content ourselves with citing some authorities.

M. Arago.—'I think we should conclude, 1, that there are comets without nuclei; 2, comets of which the nucleus is *perhaps* transparent; 3, comets more brilliant than the planets, of which the nucleus is *probably* solid and opaque.'

Sir J. Herschel.—'Whenever powerful telescopes have been turned on these bodies, they have not failed to dispel the illusion which attributes solidity to that more condensed part of the head, which appears to the naked eye as a nucleus; though it is true that in some a very minute stellar point *has* been seen, indicating the existence of a solid body.'

Mr. Airy.—'On the physical constitution of comets we have learnt nothing, except that they appear to be wholly gaseous.'

'We cannot help being convinced that every probability leans towards the truth of the gaseous hypothesis. If this be true, we might as well attempt to ascertain how far a cloud which is driven against a mountain will tend to break off the top, as speculate upon any mechanical danger to the earth from contact with a comet. The effect of such a circumstance would be the mixture of its gaseous material with the atmosphere, a

permanent rise (possibly) in the mean height of the barometer (though there is no evidence to make it highly probable that all the comets put together would have mass enough to produce a sensible effect of this kind), and, if the gaseous matter should condense sufficiently to descend to the lower regions of our atmosphere, some effect upon animal and vegetable existence, as likely good as bad. For any thing rendering the contrary highly probable, the earth may have been many times in the tail (or, as we might say, in the draught) of a comet.

That comets receive their light from the sun is made evident by their alterations of brilliancy. If they shone by their own light, the size would vary with the distance, but not the intrinsic brilliancy. But nothing like phases have been observed, except in a very few instances, which are satisfactorily shown to be either doubtful as to the fact, or not such phases as should have been, the position of the sun and earth being considered. This absence of phase is in favour of the supposition of an irregular gaseous mass.

If we take all the recorded accounts, we should certainly be inclined to imagine that the whole system of comets is diminishing in brilliancy and magnitude. But these accounts were written under the bias of terror, and must be considered as most probably exaggerated. It is impossible to see how the waste which arises from the tail can go on without such diminution. The only positive fact however is this:—that the comet of Halley, which in 1682 was as round and clear as Jupiter, was not visible to the naked eye in 1759, and in 1836 exhibited a medium brightness, being then in a much more favourable position. The question as to waste is therefore mixed up with others, from which it cannot at present be separated.

The nuclei of comets (so far as observed) have varied from 30 to 3000 miles; the lengths of their tails from nothing up to more than a hundred millions of miles.

COMET OF BIELA. [Solar System.]

COMET OF ENCKE. [Solar System.]

COMET OF HALLEY. [Halley's Comet.]

COMINES. [Nord.]

COMINES, PHILIPPE DE, Lord of Argenton, was born at the château of Comines, near Menin in Flanders, about 1445. His father was in the service of Philip the Good, Duke of Burgundy, and Philip himself was early introduced into the court of Charles le Téméraire, Philip's son, whose councillor and favourite he became for a time. When Charles made Louis XI. prisoner at Peronne in 1468, Comines succeeded in bringing about a treaty of peace between them. This timely service was not forgotten by Louis. In 1472 Comines all at once left the service of the Duke of Burgundy, and passed into that of Louis XI., who received him most graciously, and made him his chamberlain and seneschal of Poitou. Comines was employed by Louis XI. in several diplomatic missions to Savoy and other places. After the death of Louis, Comines having joined the party of the Duke of Orleans (afterwards Louis XII.), who aspired to be regent during the minority of Charles VIII., was arrested in 1486, shut up in an iron cage at Loches, tried, and condemned to banishment; but the sentence was not executed, and the fame of his abilities induced Charles VIII. to employ him on several important occasions. He accompanied Charles in his Italian campaign, of which he gives a good account in his memoirs. After his return from Italy, Comines retired to his estates, where he began to write his Memoirs. When Louis XII. succeeded to the crown in 1498, Comines repaired to court to pay homage to the new sovereign, but Louis does not seem to have noticed him by any marks of favour. Comines returned into the country, and died at Argenton in Poitou, October, 1509.

The Memoirs of Comines contain the history of his own times, from the year 1464 to the death of Charles VIII. in 1498. He gives a faithful picture of that singular character, Louis XI., whom he greatly extols for his political art. He was a cool and sagacious observer, and seems to have fully understood the crooked policy of those times. The great value of Comines' Memoirs consists in his frankness and sincerity. The Memoirs of Comines have been often reprinted, and translated into various languages. The edition by Godefroy and Lenglet du Fresnoy, London, 1747, consists of 4 vols. 4to., of which the first volume only is occupied by the Memoirs, the other three being filled with numerous historical documents and additions.

COMI'TIA. *Comitium*, a place of meeting, as the name imports. The plural *comitia* denotes assemblies of the Roman people, convened by the proper authority, in order to enact or repeal any thing by their suffrages.

There were three kinds of Comitia—Comitia Curiata, Centuriata, and Tributa. The curiata were so called because they were constituted of the citizens with reference to the distribution into curiæ. It was a patrician assembly. The comitia centuriata were instituted by Servius Tullius, who made a new division of the Roman people into six classes, which were subdivided into centuries. The division into classes was founded on a qualification of property, the amount of which determined a person's class.

According to this division the Roman people met in the comitia centuriata, in order to vote in centuries on public matters; that is, a decree of the assembly was made by counting the votes of the centuries. As the first class contained more centuries than all the other classes together, it may be said that, as Romulus had created an aristocracy of birth by his division of curiæ, so Servius Tullius created an aristocracy of fortune by his new division.

The comitia curiata originally possessed the sovereign power; but after the time of Servius Tullius it came into the hands of the comitia centuriata, and the assembly of the curiæ was reduced to a mere formality.

All legislation belonged to the comitia centuriata, and the enactments made by them only were called leges (laws). All magistrates, both ordinary and extraordinary, were elected at these comitia as consuls, prætors, censors, and others.

The comitia tributa were the comitia wherein the Roman people met and voted according to tribes. The plebeians having acquired considerable power in the state, these comitia were established, B.C. 491. Neither birth nor fortune gave advantage in these comitia, as was the case in the other comitia. Every Roman citizen who was registered in a tribe was permitted to vote in these comitia. The ordinary meeting-place was the Campus Martius. The assemblies were called by a tribune, who also presided, if tribunes or ædiles were to be elected; but at elections of other magistrates, or if laws were to be made, consuls and prætors also might preside.

Enactments made by the comitia tributa were called plebiscita, and at first bound only the plebeians. But, as the power of the plebeians became enlarged by degrees, the plebiscita, after many contests between the plebeians and patricians, were made equal in effect to the leges, by the Lex Hortensia, B.C. 288. (Gaius, i. 1.) From this time these comitia possessed the complete legislative power, independent of the senate. In the time of Augustus the elections of the comitia became a mere formality. They ceased in the time of Tiberius for the purpose of electing magistrates; but as late as the time of the Emperor Nerva the comitia were occasionally held for the enactment of laws.

COMMA, in Music (κόμμα), is the difference between two sounds whose ratio is 81 : 80; or, the difference between the major tone, C D ($\frac{9}{8}$) and the minor tone, D E ($\frac{10}{9}$).

COMMAGE'NE, a small district on the west bank of the Euphrates, between the river and the range of Taurus. The chief town was Samósata, a fortified place, which contained a royal residence; it was the birthplace of Lucian. The Zeugma, or one of the great passes of the Euphrates, was in Commagene. When Pompeius Magnus conquered Syria, he left the little principality of Commagene to Antiochus XIII., the son of Antiochus Eúsebes, who died B.C. 58. Antiochus XIV., probably his son, was king of Commagene B.C. 36, at the time of the expedition of Ventidius, the legate of M. Antonius, against the Parthians under Pácorus.

COMMANDERY, a species of benefice attached to certain foreign military Orders, usually conferred on knights who had done them some especial service. The Order of Malta had commanderies of justice, which a knight obtained from long standing; and others of favour, of which the grand master had the power of disposal.

In England, Commanderies were the same amongst the Knights Hospitallers as Preceptories had been among the Knights Templars. At the dissolution of religious houses, in the time of Henry VIII., there were more than fifty of these Commanderies in England, subordinate to the great priory of St. John of Jerusalem. The Templars' term of Preceptory was as frequently used to designate these establishments as the term Commandery.

COMMANDINE, FREDERIC, born in 1509, at Urbino, of a good family, was at first in the service of Clement VII., after whose death he studied medicine at Padua. Unsatisfied with the state of this science, he applied himself to mathematics, and finally settled at Verona, as the instructor of the Duke of Urbino and his son. He died there in September 1575.

This is all that is generally stated as known of Commandine, except the evidence which his writings afford that he is to be placed at the head of all the commentators on the mathematics of the Greeks, whether as respects the care which he took to select and print valuable remains (several of which would probably have been lost but for him), or the knowledge which he displayed in the treatment of difficult and corrupt texts.

COMMELIN, JEROME, born at Douai in France, in the 16th century, embraced the reformed religion and retired to Geneva, where he carried on the business of a printer. His abilities both as a printer and a scholar attracted the attention of Frederic, Elector Palatine, who invited Commelin to Heidelberg, and made him his librarian.

At Heidelberg he published editions of several Greek and Latin authors, which were valued for their correctness. Commelin died in 1598. He has been praised for his accuracy and learning by Scaliger, Casaubon, and De Thou.

COMMELINA'CEÆ, a very small order of tripetaloideous Endogens. None of the species are European, nor of any known use. Many of them are common Indian weeds; others are handsome American herbaceous plants. The common Spiderwort is a good type of the order, and the Tradescantias are very common in our gardens.

COMMELYN, ISAAC, born at Amsterdam, in 1598, wrote several historical works in the Dutch language; among others, 'Hollandsch Placaat Boek,' or Collection of the Acts of the Government of Holland, 2 vols. fol., Amsterdam, 1644; also a 'History of the Dutch East India Company,' 4to., 1646; the 'Lives of the Stadthouders William I. and Maurice of Nassau,' fol., 1651; and the 'Life of Frederic Henry of Nassau,' which was translated into French. He died in 1676.

John Commelyn, son of Isaac, and a senator of Amsterdam, published, in 1697, a work in folio, with very fine plates, of the new plants then growing in the Medical Garden of that city. Caspar, the nephew of John, gave to the world a second volume in 1702. At that time the Dutch held in their hands the commerce of the east, and the Commelyns were among the first who made known in Europe the curious plants of the Cape of Good Hope.

COMMENDAM. [BENEFICE, col. 167.]

COMMENSURABLE. Two magnitudes are commensurable which have a common measure.

COMMENTRY. [ALLIER.]

COMMERCIUM EPISTOLICUM. [FLUXIONS.]

COMMERCY. [MEUSE.]

COMMIA, a genus of plants belonging to the natural order *Euphorbiaceæ*. *C. Cochinchinensis* is a small tree with a resinous juice. This tree yields a gum which possesses emetic and purgative properties. It is recommended in cases of dropsy, but has not been introduced into European practice. It is a native of Cochin-China.

COMMINATION, THE OFFICE OF, a ser-

vice in the Liturgy of the Church of England. It is called 'A Commination, or Denunciation of God's Anger and Judgments against Sinners,' from the Latin word *comminatio*, a threatening or cursing. The Protestants at the Reformation introduced the reading of this comminatory service as a substitute for the ancient and still continued Roman Catholic ceremony of sprinkling the head, and making the sign of the Cross on the forehead, with ashes, on the first day of Lent, hence denominated Ash Wednesday. The form of the Commination seems to be derived from Deuteronomy xi. 26-30, and xxvii. 1-26.

COMMINGES a district at the foot of the Pyrenees, formerly included in Gascogne, and now in the departments of HAUTE-GARONNE and ARIE'GE. It was divided into Bas-Comminges, Haute-Comminges, and Couserans, of which the respective chief towns were Lombez, St. Bertrand, and St. Lizier, and each of these gave title to a bishop.

COMMISSARY, an officer who is delegated by a bishop to act in a particular part of the diocese, to exercise jurisdiction similar in kind to that exercised by the chancellor of the diocese in the consistory court of the diocese. A commissary has, generally speaking, the authority of official principal and vicar-general within his limits. An appeal lies from his decisions to the metropolitan. The commissarial courts were established for the convenience of the people in parts of the diocese remote from the consistory court. A commissary must be learned in the civil and ecclesiastical law, a master of arts or bachelor of law, not under the age of twenty-six, and he must subscribe the Thirty-Nine Articles. (Canon 127.)

[AGENT; BROKER; FACTOR.]

COMMISSION. This word appears to be used generally to express the instrument by which authority is delegated by one person to another; and it is particularly used to express the instrument by which the crown gives authority to a person or persons to do any act. A commission, then, is a warrant or letter patent by which a person is empowered, or persons are empowered, to do any act, either ordinary or extraordinary. Some commissions in England issue from the king under the Great Seal, and others are only signed by the king. There was formerly a High Commission Court, but it was abolished by 16 Charles I. c. 11, and 13 Charles II. c. 2.

An enumeration of some of the principal kinds of commissions will show the nature of the power thereby given, and the objects of it:—

Commissions of Oyer and Terminer, and Gaol Delivery. [ASSIZE.]

Commission of Lunacy. [LUNACY.]

Commission of the Peace. [JUSTICES OF THE PEACE.]

Commission, Naval and Military, and others. [COMMISSION, MILITARY.]

COMMISSION, MILITARY, is the document by which an officer is authorised to perform duty for the service of the state.

In England in former times the regular mode of assembling an army, either to resist an invading enemy or to accompany the king on a foreign expedition, was by sending a royal command to the chief barons and the spiritual lords, that they should meet at a given time and place with their due proportion of men, horses, &c., properly equipped, according to the tenure by which they held their estates; and these *tenants in capite* appear to have appointed by their own authority all their subordinate officers. But commissions were occasionally granted by the kings authorising individuals to raise men for particular service.

Commissions of array, as they were called, were also issued by the king in England, probably from the time of Alfred, for the purpose of mustering and training the inhabitants of the counties in military discipline; and in the reign of Edward III. the parliament enacted that no person trained under these commissions should be compelled to serve out of his own county except the kingdom were invaded. Of the same nature as these commissions of array was that which, in 1572, when the country was threatened with the Spanish invasion, Queen Elizabeth issued to the justices of the peace in the different counties, authorising them to muster and train persons to serve during the war. This privilege of granting commissions to the officers of the national militia continued to be exercised by the lord-lieutenants of counties, the king having the power of confirming or annulling the appointments; and it was made law in the reign of Charles II. The militia has been disembodied for several years; but commissions in the yeomanry cavalry, a force which is still kept up in England, are granted by the lord-lieutenants.

In the British regular army all the commissions of officers are signed by the king. The several commissions in the navy are a sort of warrant, and are signed by the Lords Commissioners of the Admiralty; but the documents are called commissions, and they are signed in the name of the king. In the navy, in the regiments of artillery, and in the corps of engineers and marines, the commissions are conferred without purchase; and to a certain extent this is the case with the commissions granted to officers of the line. Those cadets who have completed a course of military education in the Royal Military College at Sandhurst are so appointed. In other cases, gentlemen obtain leave to enter the army by the purchase of an ensigncy, the prices of which, in the different classes of troops, are regulated by authority; and they proceed to the higher grades on paying the difference between the price of the grade which they quit and of that which they enter.

The commissioned officers of a battalion of infantry are as follow:—Field-officers—colonel, lieutenant-colonel, and major. Regimental officers—captains, lieutenants, and ensigns. Staff-officers—chaplain, adjutant, quartermaster, and surgeon. For the prices of commissions see the Monthly Army Lists.

Commissions in the military service of the East India Company are given by the Court of Directors; and in the British colonies, where a militia is kept on foot, commissions are given in it by the governors as captains-general.

COMMISSIONERS, ECCLESIASTICAL. [ECCLESIASTICAL COMMISSIONERS.]

COMMISSIONERS, LORDS. [ASSENT, ROYAL.]

COMMITTEE. [PARLIAMENT, IMPERIAL.]

COMMITTEE OF PUBLIC SAFETY, *Comité de Salut Public*, the name given to a committee of members of the National Convention, who exercised a dictatorial power in France for about fifteen months, which is known by the name of the Reign of Terror. The National Convention, having abolished the royal authority at the end of 1792, and proclaimed the republic, delegated the executive part of it to several committees or departments of government, and placed a Committee of Public Safety over all. This committee consisted of ten members of the Convention, appointed for three months, but re-eligible indefinitely: they were commonly called the decemvirs. By degrees their powers attained a most extensive range; all the constituted authorities and public functionaries, civil and military, were placed under their immediate inspection. This was after the successful insurrection on the 31st of May, 1793, when the Mountain or Terrorist party in the Convention gained the victory, by means of the armed multitudes of Paris, over their fellow-deputies of the Gironde party. From that time Robespierre and his friends monopolised all the power of the Committee of Public Safety. [ROBESPIERRE.]

Acting in the name of the National Convention, the Committee was in fact master of that assembly, which it compelled to adopt its reports and resolutions; and it decreed the proscription of any member who resisted its will. In the Convention, from which nominally they derived their power, they were supported by a few bold men, who frightened the rest with the pikes of the mob and with threats of the scaffold. But when these men, Tallien, Barras, and others, discovered that they themselves stood in the way of Robespierre's ambition, and were destined to the common lot of the guillotine, they turned upon him and his friends of the Committee, and the majority of the Convention, which had through fear acquiesced in all their measures, immediately sided with them. On the 9th Thermidor, July 18, 1794, Robespierre, Couthon, and St. Just were executed.

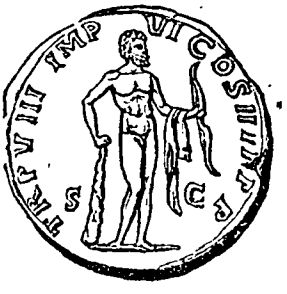
COMMODORE (*Comendador*), in the Royal Navy, is the officer commanding a small number of ships of war, when detached for any particular service from the fleet. His rank is immediately below that of a rear-admiral, and his ship is distinguished by a red pendant at the mast-head. The title is sometimes given to the senior captain in a fleet of merchant ships.

In the French service the commander of a detachment of ships is called *Chef d'Escadre;* and in the time of Louis XIII. the commander-general of the fleet was so called when he had not the rank of admiral.

The highest rank in the navy of the United States of North America is that of Commodore, which is given to the commanders of squadrons at the six stations at which a naval force is maintained by the United States government.

COMMODUS, LUCIUS ÆLIUS AURELIUS, son of Marcus Aurelius and of his wife Faustina, was born A.D. 161. He accompanied his father in his last expedition against the Quadi and the Marcomanni, during which Aurelius died at Vindebona (Vienna), and Commodus became

Coin of Commodus. British Museum.



Coin of Commodus. Reverse

his successor A.D. 180. Having made peace with the northern tribes, he returned to Rome, where he enjoyed a triumph. For a short time he appears to have governed with moderation, but, after dismissing the counsellors and friends of his father, he gave himself up to the society of freedmen, gladiators, and loose women. His elder sister Lucilla conspiring against him with Pompeianus, Quadratus, and other senators, they were all seized and executed. Having put to death his own wife Crispina, Commodus took for his concubine Marcia, a mistress of Quadratus, who seems to have maintained some influence over him till his death. But a succession of unworthy favourites engrossed all political power, and committed every kind of injustice and cruelty. Conspiracy after conspiracy was discovered or invented by them, and many of the principal senators were put to death, and their property confiscated. Meantime the legions in Britain mutinied, and Commodus sent Pertinax to appease the mutiny. A dreadful pestilence afflicted Rome about the same time, which lasted three years; and Commodus, to avoid the contagion, retired to Laurentum, where he continued his usual dissolute mode of life. In A.D. 192, Commodus was consul, for the seventh time, with Pertinax, whom he had recalled to Rome. Having had information of Severus aspiring to the empire, Commodus wrote to Albinus in Britain, offering him the title of Cæsar, which was refused. At the close of his career, Commodus set no bounds

to his extravagancies: on one occasion it is said that he danced naked before the spectators, in the amphitheatre. (Herodian, i. 15.) Being dissuaded by Marcia and some of his officers from degrading himself in public in the company of gladiators, it is said that he wrote down their names for execution, and that the scroll being found by Marcia led to a plot against his life. However this may be, poison was administered to him, and while suffering under its effects a powerful athlete strangled him, A.D. 192, in his 32nd year. Pertinax, who succeeded him, had his body buried privately, but it was afterwards transferred to the Mausoleum of Hadrian. (Dion Cassius; Lampridius, *Commodus, Antoninus;* Herodianus, i. 6–16.)

Commodus had the advantage of a good education and the example of a most virtuous father; but he possessed no talents for administration. The rapid decline of the Roman empire may be said to date from his reign.

COMMON LAW. In its most general signification the expression Common Law denotes the ordinary law of any country: when used in this sense it is called *common*, as prevailing over a whole country, in contradistinction to *particular* laws, the operation of which is confined to a limited district or to a peculiar class of inhabitants. In England the Common Law is that body of customs, rules, and maxims which have acquired their binding power and the force of law in consequence of usage, recognised by judicial decision, and not by reason of statutes now extant. Sir Matthew Hale, in his 'History of the Common Law of England,' divides all the laws of England into two kinds, the written law, and the unwritten law; and he adds, 'Although all the laws of this kingdom have some monuments or memorials thereof in writing, yet all of them have not their original in writing; for some of these laws have obtained their force by immemorial usage or custom, and such laws are properly called *leges non scriptæ*, or unwritten laws or customs' (chap. 1). He confines the term written laws, in which he is followed by Blackstone, to statutes or acts of parliament; but this is not quite correct, for there are other rules, such as rules of court, made by the judges of the common-law courts, and orders in chancery, made by the judges in chancery, pursuant to power given to them, which are laws, and 'written laws,' according to Hale's definition, for the 'original' of them is in writing. The term unwritten law also is applicable to a great part of that kind of law called equity, for the original of it does not exist in writing. A large part of the law of equity is founded on judicial decisions made in conformity with some established principles, and therefore it resembles that part of the common law which is recognised as such by the decisions of common-law judges. In addition to customs and usages, whose particular origin is unknown, many portions of the common law consist of statutes passed before the time of legal memory, that is, the beginning of the reign of Richard I., which, though known historically to have been acts of parliament, have no authority as laws in that character, but derive their obligation from immemorial usage, recognised by judicial decision. The provisions of the common law are however quite as binding as acts of the legislature, for they have received the character of law by force of judicial decisions. Law made by judicial decision is called by Benthan *judge-made* law; a term which also includes a part of the law called equity, which is administered in the courts of chancery. The term is correct as denoting the *formal* mode in which this kind of law is made; but it is insufficient in not indicating that the matter of the law is supplied by the common consciousness of the people, which manifests itself in the form of common opinion and common usage.

The Common Law of England then is not immemorial custom only: it is also that law which grows up in the country by virtue of its social development, without being originally promulgated in writing by the legislature, or by any person or persons empowered by the legislature to promulgate in writing rules which are binding on all. The common law is consequently continually receiving additions and undergoing modifications.

COMMON MEASURE, any magnitude which is contained an exact number of times in two other magnitudes. Thus, in the case of numbers, 7 is a common measure of 56 and 700.

COMMON PLEAS, COURT OF, a superior court of record, which has jurisdiction over England and Wales in all common pleas or civil actions. It is at present composed of five judges, one of whom is chief justice and the other four are *puisne* justices. All are created by the king's letters patent. This court has been stationary at Westminster Hall for several centuries.

Before the passing of the Statute of 3 & 4 Will. IV. c. 27, this court had an exclusive jurisdiction in all those actions which, as they concerned freeholds or realty, were called real, including as well those on which the common assurances of fines and recoveries passed, as the others which were commenced by the king's original writ out of chancery. Since the abolition of real actions by the above-mentioned act (with three exceptions), dower and quare impedit are the only forms of action in which this court has exclusive jurisdiction: for in mixed and personal actions the King's Bench and Exchequer of Pleas have long exercised concurrent power. The Court of Common Pleas is a court of appeal from the decision of the revising barristers in the matter of disputed claims to vote for members of parliament. (6 Vict. c. 18, § 42.)

By the statute 2 Will. IV. c. 39, introduced by the late Lord Tenterden, to secure uniformity of process in personal actions in the three superior courts of law, certain forms of process, called writs of summons, are provided as the only means for commencing personal actions in any of those courts, and they may be issued from any of them.

By 11 Geo. IV. & 1 Will. IV. c. 70, the judgments of this court can only be reviewed by the judges of the King's Bench and of the Exchequer, who form a court of error in the Exchequer Chamber; the further appeal is by writ of error returnable in the Lords' House of Parliament.

(For an account of the privileges of sergeants-at-law in the Court of Common Pleas, see SERGEANT.)

COMMON RECOVERY. [RECOVERY.]

COMMON, RIGHT OF, is the right of taking a *profit* in the land of another in *common* with others. It may either be such a right as is enjoyed in common with others to the exclusion of the owner of the land, or it may not exclude the owner of the land. The commoner has no interest in the soil of the land on which he has a right of common.

The profits which may be the subjects of common right are the natural produce of land (or water, which is included in the legal signification of land); such as grass and herbage, turf, wood, and fish. The commons relating to these subjects are accordingly called common of pasture, turbary, estovers, and piscary. Other things which cannot be called products of land, but rather part of the land itself, as stones and minerals, may also be the subjects of common right. Rights of way and other accommodations in the land of another, though they may be enjoyed in common by several persons, do not bear that name, but are called Easements.

Common Appendant is a right of common which a man enjoys in respect of his title to a piece of land. The right is appendant or attached to the land.

Common claimed by prescription (which supposes a grant) may be as various as grants may be. A right of common thus founded may be either annexed to land (when it is said to be appurtenant), or altogether independent of any property in land, when it is said to be in gross. Common in gross must be claimed either by prescription or by deed, and is not appendant or appurtenant to any certain land.

Common appurtenant may be severed from the land to which it was originally annexed, and then it becomes common in gross.

The title to common by custom is peculiar to copyholders and may also give the commoner various modifications of right.

The rights of the owner of the soil over which a right of common exists, are all such rights as flow from ownership, and are not inconsistent with the commoner's rights.

Rights of common are conveyed, like all other incorporeal hereditaments, by deed of grant. When they are annexed to land, they will pass with the land by any conveyance which is adapted to transfer the land.

If the owner of common appurtenant purchase *any part* of the land over which the right extends, the right of common is *altogether* extinguished; it is the same if he release his right over any part of the land. This unreasonable rule however does not extend to common *appendant*, though that will be extinguished if the commoner becomes the owner of *all* the land in which he has common, and partial extinguishment of the common will follow from acquisition of part of the land. The enfranchisement of a copyhold to which a right of common is annexed extinguishes the right.

The most usual mode of extinguishing rights of common in modern times is by inclosure under act of parliament. [INCLOSURE.]

COMMON, TENANCY IN. Tenants in common are they which have lands or tenements in fee simple, fee tail, or for term of life, &c., and they have such lands or tenements by several titles and not by a joint title, and none of them know of this his several, but they ought by the law to occupy those lands or tenements in common and *proindiviso*, to take the profits in common. (Litt., s. 292.) There may be tenants in common of other things besides land, as a chattel for instance [CHATTEL], such as an animal, or any inaminate moveable. The undivided shares of tenants in common may be equal or unequal: and the quantity of their interest may be equal or unequal, for one may hold his share of land in fee simple, and the other in tail, for life, or for years. So long as the less interest exists, he who has the less and he who has the greater interest are tenants in common. For all the purposes of sale, disposition by will, or transmission in consequence of intestacy, the undivided shares of tenants in common are like separate property. As to enjoyment, it is to be in common, as Littleton says, when it can be; and, when it cannot, the parties must agree about the mode of enjoyment, as in the case of a moveable thing, and, if they cannot agree, they must sell it and divide the money.

A tenancy in common may be created in several ways. If a joint-tenant, or coparcener, alienes his share to a stranger, the latter is a tenant in common with the remaining joint-tenant or coparcener. If the sole owner of property alienes an undivided part of it and retains the rest, the grantor and grantee are tenants in common. As to the words which, in a transfer of property to two or more persons, create a tenancy in common, or a joint-tenancy, many nice distinctions exist. At present the courts endeavour so to construe all instruments as to create tenancies in common rather than joint tenancies.

Courts of Equity have decided that in certain cases a conveyance to two or more makes them in equity tenants in common, and not joint-tenants, unless there is an express declaration to the contrary. This is the rule where a mortgage is made to two or more, and when an estate purchased by two or more is conveyed to them in unequal shares. This doctrine is sometimes in practice found very inconvenient.

A tenancy in common ceases when the ownership of the several shares exists in a single individual: it can also be destroyed by partition. Any one of the tenants may compel the others, by suit in equity, to make partition of lands, houses, or other things held in common, except when the subject is in its nature not partible, as a living animal for instance.

COMMONS are wastes and pastures which have never been exclusively appropriated by any individual, but used in common by the inhabitants of a parish or district. Where extensive common rights exist, the mode of cultivating the inclosed land is greatly affected by it. All the cattle being maintained on the commons for a

great part of the year, less land is laid down to grass, and only so much is kept in meadow as will produce hay to feed the cattle in winter weather, and when the commons will not sustain them. The consequence is, that the arable land is not well cultivated, little manure is made in the yards, and the rent is paid by the stock which runs on the commons, and which increases and grows without any expense to the owner. But it is a wasteful disposition of the land. Common pastures are never improved; no one will drain or clear them of weeds, still less manure them. The stock kept upon them is not by any means so numerous as could be kept on the same surface divided and improved. Hence most of the commons and common fields in Great Britain have been divided and inclosed within the last forty years. [INCLOSURE.]

Common fields differ from commons, in that they are divided for the purpose of cultivation; but as soon as the crop is off the ground, the cattle of all the proprietors, or of all the parishioners, as the custom may be, have a right of pasture over the whole common. This system is incompatible with an improved husbandry, and common fields have been very generally divided and inclosed by particular acts of parliament.

COMMONS, DOCTORS'. [DOCTORS', COMMONS.]

COMMONS, HOUSE OF. [PARLIAMENT, IMPERIAL.]

COMMUNION (the Latin *communio*, the Greek *κοινωνία*, *koinónia*) is used to designate the uniformity of belief by which a number of persons are united in one denomination or church, as the Roman Catholic, Anglican, or Lutheran communion.

Communion is used more especially for the common or public act of sharing or participating in the sacrament, eucharist, or Lord's Supper. Of the origin and use of the word communion in this sense an account is given by Casaubon, 'Exercitat.' 16, s. 30. During the first three centuries the communion was celebrated every Sunday. (Bingham's 'Origines Ecclesiasticæ,' vol. v. c. 9.) It was subsequently administered only three times in the year, namely, at Easter, Whitsuntide, and Christmas. By the general council of Lateran, in 1215, it was decreed, in order to check the apparent inclination in many to neglect it entirely, that every one should at least communicate at Easter, that is, once a year. This injunction was afterwards renewed by the council of Trent. For an ample account of the ancient communion service, *Missa Fidelium*, as well as of the ante-communion service, *Missa Catechumenorum*, we refer to Bingham, vol. v. c. 1. to 9. There was one form for the clergy, a second for the laity (vol. vi. c. 2 and 3), and a third and lowest form for strangers or foreigners. Degradation of the clergy to the lay form of communicating in one kind, that is, with bread and no wine, appears to have been an ancient mode of canonical punishment. ('Apost. Can.,' c. 14.) The bread appears never to have been omitted: the difference between communicating under one or two species or kinds, as it is termed, being solely in the omission or inclusion of the wine. The communion in two kinds seems to have continued in the Latin church until the end of the 11th century. The communion under one species, that is, with bread alone, was authorised in 1415 by a decree of the council of Constance, and was confirmed by the council of Trent in 1562: but, with the exception of the Latin church, all the various sects of Christians have retained the communion under two species.

COMNENUS. [ALEXIS COMNENUS.]

COMO, a province of Austrian Lombardy, is bounded N. by Valtellina, and the Swiss cantons of Grisons and Ticino; W. by the Lago Maggiore, which divides it from the Sardinian territory; S. by the province of Milan; and E. by that of Bergamo. Its length from N. to S. is about 40 miles. Its breadth is very irregular. The east or larger division of the province incloses the whole length of the Lago di Como, the *Larius* of the Romans, a fine piece of water, long, narrow, and tortuous, full of promontories, gulfs, and little bays. Its most northern extremity, called Laghetto, is joined to the other part by a narrow channel, which the Adda, coming from Valtellina, enters on the east side. The lake then extends nearly due S. for 15 miles; after which it divides into two branches: one, running S.S.W. for about 18 miles, retains the name of Como, the city of that name being at the extremity of it; the other branch running S.S.E. for 12 miles, under the name of Lago di Lecco, from the town of Lecco, a little below which the Adda issues out of the lake. The breadth of the lake varies from 1 to 3 miles. A steamer plies between the city of Como and the several towns along the lake. Two projections of the Rhætian Alps encompass the basin of the lake: one, proceeding from the Splugen, runs parallel to the west bank, and divides it from the basin of the Lake of Lugano. The east ridge is an offset of the chain which divides Valtellina from Lombardy, and in Monte Legnone reaches the height of about 9000 feet. These two ridges sink lower and lower as they advance to the south, until at last they merge into the great plain of Lombardy. The climate of the districts along the lake is mild and genial, the soil productive in fruits and vegetables, and the country studded with thriving villages and villas. The most northern part of the province includes the lower heights of the Alps, which are covered generally with forests of larch, fir, birch, oak, and chestnut; while the slopes and valleys are covered with pasture. The southern declivities are formed into terraces, and cultivated with great labour.

In the triangle formed by the two south branches of the lake are two ranges of hills, one parallel to each branch, and both meeting in the promontory on which Bellagio stands. Between these ranges is the fertile valley of Assina, in which the Lambro, a feeder of the Po, takes its rise. At the south entrance of the valley stands the town of Erba, in the neighbourhood of which are pretty hills covered with villages, gardens, and country houses, the resort of the wealthy Milanese in summer and autumn. This district produces excellent wine, of which that of Montorobio is the best;

but it is not carefully enough prepared to be fit for exportation. Here, and in all the southern part of the province extending from the Adda to the upper valley of the Olona and the Lago Maggiore, the culture of the white mulberry-tree and the rearing of silkworms forms a most important branch of industry, and nowhere is the preparation of the raw silk for manufacturing use better understood than here. In the environs of Como there are great pine forests. The cypress grows in many parts of the province. The roads are good, as they are in every part of Lombardy: they have been much improved of late years, considerable sums being devoted annually to this branch of administration.

The west division of the province of Como consists of the district of Varese and the east coast of the La Maggiore. Varese is a bustling town near the little lake of that name, in a fine hilly country, where some of the best silk in Lombardy is produced. The population of Varese is about 4000. A road leads from Varese to Laveno, where boats cross over the Lago Maggiore to Pallanza on the Sardinian side. Going in a south direction, towards the borders of the province of Milan, the hills gradually sink, and the southern verge of the province of Como merges into the great plain of Lombardy. In this district some lead mines are worked near Viconago on the western shore of the Lago Lugano.

Upon the whole, the province of Como is one of the finest, both for scenery and production, in north Italy. It is well cultivated, though not so fertile as the plain; it produces corn, wine, oil, silk, oranges, fruits of all kinds, especially vast quantities of lemons, the cultivation of which is supplanting that of the olive. [BRESCIA.] The lake abounds with fish. The houses of the peasantry, as is the case all through Lombardy, are built of brick, and covered in with tiles; they generally contain large, well-aired, and clean apartments, to which circumstance the superiority of the silk is partly owing; for the silkworms are not reared in large establishments constructed for the purpose, as in France, but in the houses of the peasantry, and they are known to thrive best in good apartments. The population of the province is about 370,000. Education is well attended to, and almost universally diffused among the inhabitants.

COMO, the capital of the province, and a bishop's see, is situated at the S.W. extremity of the lake, surrounded by hills, in 45° 48′ N. lat., and 9° 6′ E. long., 22 miles N. by W. of Milan, and has 16,000 inhabitants. Como has a Royal Lyceum, a gymnasium, a diocesan college for theological students, a college of boarders called Gallio, and an institution for female education under the direction of the nuns of St. Francis-de-Sales. The cathedral, or Duomo, which ranks third among the great Gothic structures of Italy, the church of San Fedele which dates from the time of the Lombard kings, the theatre, the imperial lyceum, the Palazzo Giovio, which has a collection of ancient inscriptions, and the lofty gate-entrances of the town, are a few of the very remarkable structures of this ancient city. The suburb called Borgo Vico, which stretches along the lake, contains several fine palaces of the nobility. On a hill south of Como is a lofty ancient tower called del-Baradello. The town is famous for its manufacture of silk, woollens, cotton yarn, and soap. A steamer plies regularly on the lake. Among the great men born in Como are Pliny the younger, of whom there are many memorials in the town and along the shores of the lake, Piazzi the astronomer, and Volta, the inventor of the Voltaic battery.

Comum is said to have been built by the Orobii, the oldest inhabitants of the country. It was afterwards occupied by the Gauls with the rest of the territory of the Insubres. In the year 196 B.C. Marcus Claudius Marcellus, having defeated the Boii and the Insubres, occupied Comum. Cneius Pompeius Strabo sent a colony to Comum, and Julius Cæsar established a new colony, among whom were 500 Greeks of distinguished families. It then assumed the name of Novum Comum.

COMOCLA'DIA, a genus of plants belonging to the natural order *Anacardiaceæ*.

C. dentata, Tooth-Leaved Maiden Plum, is a tree reaching a height of about thirty feet. It is a native of the woods of Cuba and St. Domingo, where it is called Guao. A milky juice exudes from the stem, which is glutinous, and becomes black by exposure to the air. It stains linen and the skin black, which cannot be washed out of the former, and only comes off from the latter by the exfoliation of the cuticle.

C. integrifolia is a tree twenty feet high. The berries are black and succulent, and may be eaten with impunity, but are not pleasant to the taste. The wood is hard, of a fine grain, and reddish colour. The tree gives out a watery juice, which is slightly glutinous, and grows black on exposure to the air. Like the juice from the last, it stains linen and the skin indelibly. It is a native of Jamaica.

COMORIN, CAPE. [HINDUSTAN.]

COMORN, or KOMORN. [HUNGARY.]

COMORO ISLES, a group of four islands in the Mozambique Channel, between Africa and the N.W. coast of Madagascar. Comoro, the largest of them, is about 30 miles long, and 12 broad. Fat bullocks, sheep, and goats are cheap; oranges, lemons, and plantains abundant. No spring water is to be had on this island, which is seldom visited by Europeans. There is a large town with a landing-place for boats on the east side of it. Mohilla, the smallest of the group, is about 30 miles S.E. by S. from Comoro; it contains several villages, and abundant supplies of water and provisions. The coast is dangerous on account of the reefs and the surf; but there are two tolerable anchorages. Mayotta, the most southern of the islands, is entirely surrounded with reefs; provisions and water can be had, but there is great danger in attempting to land. Johanna, or Anzouan, or Hinzuan, is the best known of the group, having been long frequented by European ships for the purpose of getting provisions on the outward voyage. At the town of Machadou on the coast there is good anchorage; and water and other provisions may be obtained.

The island has 12,000 inhabitants, who trade in slaves and the produce of the island with the coast of Arabia, from which they carry back Indian piece-goods and other commodities. Small fat bullocks, poultry, rice, yams, sweet potatoes, pine-apples, oranges, guavas, and other fruits are given to ships' crews in barter for red and blue cloth, apparel, nails, iron, razors, knives, beads, looking-glasses, muskets, cutlasses, gunpowder, flints, &c. The sultan of the islands resides at Machadou, which has 3000 inhabitants. The population of the islands is said to be diminishing in consequence of the incursions of pirates from Madagascar, who carry the people away into slavery. The group is of volcanic origin, and contains several peaked mountains, one of which in Johanna is 6000 feet high. Except on these summits the soil is very fertile. (Sir W. Jones; Horsburg's *Directory;* Macgregor's *Statistics*; Balbi, *Géographie.*)

COMPANIES, JOINT STOCK. [JOINT STOCK COMPANIES.]

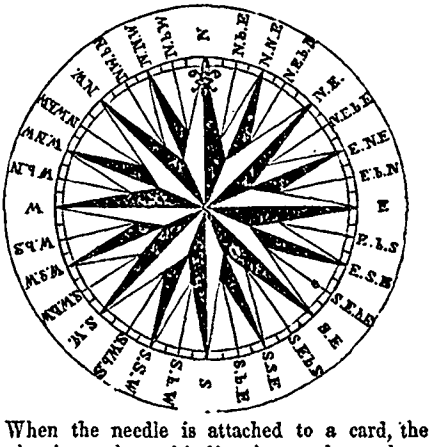
COMPANY, in military affairs, is the body of men which constitutes one of the principal divisions of a battalion of infantry, and which corresponds to the troop in a regiment of cavalry. The strength of a company in the regiments of guards and of the artillery is 120 men, but in the regular infantry, 100 men. In each battalion there is one which is denominated the grenadier company, and another bearing the name of the light company; and these are called flank companies from their stations, which, when the battalion is drawn up in line, are at its extremities. The grenadiers acquired that denomination from the grenades, or small shells, which they were appointed to throw by hand into an enemy's works; and the light companies were so called from the activity required in the men, who are frequently detached from the line in order to act as skirmishers, according to circumstances, about the battalion or brigade to which they belong. Every company of the line and militia is commanded by a captain, under whom are a lieutenant and an ensign, besides the non-commissioned officers; but in the regiment of artillery, the rifle brigade, and the corps of engineers and marines, each company has, instead of an ensign, a second lieutenant.

It is observed by Grose, that probably from the time of the Conquest the English infantry was divided into corps, consisting of 1000 men, which were subdivided into hundreds and tens. And he remarks that, in the list of the army engaged at the siege and battle of St. Quentin in 1557, each company is stated to consist of 100 men, and to be commanded by a captain, a lieutenant, and an ensign, as at present, besides a sergeant, a harbinger, or quartermaster, and a drummer.

COMPASS, AZIMUTH, is a compass with a telescope, or with plain sights (generally vertical wires) attached to it in such a manner as to be moveable round a vertical axis independently of the needle or of the card to which the needle is affixed. A pointer shows the angle which the position of the telescope, or sights, marks out on the card, that is, the *bearing* of the object towards which the sights are directed. This angle is the true azimuth of the object, when the correction for magnetic variation is made. But, when the bearings of two objects are measured, the correction need not be applied in merely determining the sum or difference of bearings, since the error affects both equally.

COMPASS, THE MARINER'S, is a cylindrical box, generally of brass, in the centre of which is fixed vertically, a steel pin terminating in a fine conical point, and on this is accurately balanced a magnetised needle, or a circular card to the underside of which such a needle is attached in the direction of a diameter. In the centre of the needle is usually inserted a piece of agate in the lower part of which is sunk a conical hole to receive the point of the pin; and the needle with the card is supported on that point so as to *traverse* freely in a horizontal position.

The rim of the compass-box, or the circumference of the card, is divided into thirty-two equal parts called *points* which have symmetrical designations on opposite sides of each of the four *cardinal points* as they are called (*cardo*, a hinge or pivot), namely, the north, the east, the south, and the west.



When the needle is attached to a card, the north point on the card is directly over the northern extremity or pole of the needle. A vertical line is drawn within the compass-box, in a fixed position with respect to the ship; and this line indicates the point on the edge of the card, which is in a vertical plane passing through the pivot parallel to a vertical plane passing through the keel (the ship floating upright); the bearing of the ship's head is therefore shown by the point on the card which is in coincidence with the fixed line in the box. To insure the horizontality of the compass-card, the cylindrical box in which it is enclosed is supported in a hoop at opposite points by pins projecting from it, so as to allow the box to revolve inside the hoop. This hoop is supported in the same manner on pivots, the line of which is at right angles to the first pivots; so that, between the rotation of the compass-box in the hoop and the hoop itself, the former can always find its position of equilibrium, which is the horizontal position. The small oscillations of

the apparatus are immediately destroyed by the friction. The apparatus is then said to be supported on gimbles, or gimbals.

For greater accuracy, the compass-box or the card is divided into degrees, and each point is equivalent to 11° 15′. Sometimes fractional parts of the *points* are used; thus N.E. ¼ E. signifies that the bearing is one quarter of a point from the north-east towards the east.

COMPASS, HISTORY OF THE. The knowledge of the directive power of the magnet was unknown to the Greeks, the Romans, and to European nations generally, till late in the 12th century, and does not appear even then to have been brought into common use for nautical purposes. It has however been so known and so used in China, Japan, India, and Arabia, from periods of high antiquity. Doubts, indeed, have been often expressed of the validity of the claims of the Chinese, and of the authenticity of the dates attributed to the notices of it in the grand annals of their empire: but the most careful examination of the Chinese claims does not warrant our scepticism on one point or the other; and the Jesuit missionaries, who went to China in the beginning of the 17th century agree in the conviction that those records were authentic. No exact translation into any European language of the passages from which they drew their accounts of the directive properties of the magnet had however been given till Klaproth published his 'Lettre à M. A. Humboldt sur l'Invention de la Boussole,' at Paris; and a translation of the passage in question has been again given in English by Mr. Davies, in his 'Early History of the Mariner's Compass,' which was published in the 'British Annual for 1837.' The substance of it is that, 'Tchi-yeou having rebelled, the emperor Hiuan-yuan collected the forces of the empire and attacked him in the plains of Tchou-low. Tchi-yeou raised a thick fog, in order that by means of the darkness he might spread confusion in the enemy's army. But Hiuan-yuan constructed a *chariot for indicating the south, in order to distinguish the four cardinal points;* by means of which he pursued the rebel and took him prisoner. The spot received, from this circumstance, the name of the Plain of the Broken Curb, and the event is referred to the date 2634 years before our æra.'

Though numerous other passages of various dates speak equally explicitly of the use of the compass for land purposes, yet no mention of the use of the magnet for *navigation* occurs in any of their books that have come to the knowledge of Europeans, till the dynasty of Tsin, which lasted from the year 265 to 419 of Christ. It is in the great dictionary Poi-wen-yeu-fou; and it is there stated that 'there were then ships directed to the south by the needle.' From an Arabic MS., which appears to have been written in the 11th century, and was published by Renaudot, at Paris, in 1718, we learn that in the 9th century the Chinese traded in ships to the Persian Gulf and the Red Sea; and it is very unlikely that this people should have known the directive property of the magnet, and have used it on land for thirty centuries, and yet not have employed it at sea. That the magnetic needle was used for the purposes of navigation on the Syrian coast before it was generally employed in Europe is evident from a passage in a MS. written in 1242 by Baïlak Kibdjaki, in which the method of magnetising the needle is described. It is stated that a needle is driven into a wooden peg or a corn-stalk, so as to form the shape of a cross, and is thus made to float on water in a basin sheltered from the wind. A small loadstone is then brought to the surface of the water; and a rotatory motion being given to the hands towards the right, so that the needle turns round, on quickly withdrawing the hands it is found that the ends of the needle point towards the north and south.

The Mariner's Compass is minutely described by Guyot de Provins, who wrote his satire entitled 'La Bible,' about the year 1190. Guyot was a minstrel by profession, and had probably seen the compass in use during the crusades, to one of which most likely he had previously attached himself. There is not however the slightest foundation for the belief that it was used by European seamen at so early a period, though there can be but little doubt that by the middle of the 13th century it had come into partial use and into general knowledge; since, in one of the songs of Gauthier d'Epinois, is an allusion which no one would have made had not his auditors been familiar with the magnetic needle.

It was long contended that the inventor of the compass as a nautical instrument was Flavio Gioja, a native of Amalfi, near Naples, and the date given by the Italians is from 1300 to 1320. It will be obvious, from what we have already said, that there is no foundation for this opinion; but it is highly probable that Gioja greatly improved the compass, either by its mode of suspension, or by the attachment of the card to the needle itself, or in some other important particular.

The French have laid claim to the discovery of the compass, or at least to the attachment of the card to the needle, from the circumstance of the north point being marked with the *fleur-de-lis;* but, in the absence of all distinct evidence on this point, it is much more probable that the view taken by Mr. Davies is correct—that the figure is an ornamented cross, and originated in the devotion of an ignorant and superstitious age to the mere symbol. Or, again, he observes, as the compass undoubtedly came into Europe from the Arabs, the *fleur-de-lis* might possibly be a modification of the *mouasala* or dart, the name by which the Arabs called the needle. The declination, or variation as it is frequently called, of the magnetised needle appears to have been known to the Chinese at a very early age. [DECLINATION OF THE MAGNETIC NEEDLE.]

By whom the suspension, now generally used, was invented, is altogether unknown from any document or other evidence. The suspension of the whole machine itself on two circles, whose suspending diameters are at right angles to each other, technically called gimbals (or jimbals), is however, on all hands, admitted to have been English, though we are still ignorant both of the

person who invented it or the period of the invention.

The dip of the needle, or its *inclination*, was also the undoubted discovery of an Englishman, Robert Norman, a nautical instrument maker at Wapping, who published an interesting account of the course of his experiments in 1594, under the title of the 'New Attractive.' [INCLINATION.]

The Variation of Declination is also an English discovery, having been made, as is well authenticated, by Stephen Burrowes, of Limehouse, and fully determined by Gillebrand, Professor of Geometry in Gresham College; and the diurnal variation of the declination also unquestionably belongs to another Englishman, Mr. Graham, about 1719. [VARIATION OF THE COMPASS.]

Few attempts of any moment have been made till recently to examine the magnetic conditions and changes to which the needle was subjected, or the advantages of one form of the needle itself over another. The only improvements were those which insured greater nicety of construction; and, except in this respect, the needle was, at the beginning of the 19th century, in precisely the same state as it was three centuries before. The manner of effecting the symmetrical diffusion of the two opposite species of magnetism in the two arms of the needle is generally conceded to be the method of double touch, invented by our countryman Michel; and the experiments of Captain Kater leave no doubt that the greatest directive power (whatever method of magnetising be employed) is given to the needle, when it has been prepared by hardening it throughout at a red heat, and then softened from the middle to within about an inch of each end, till the blue colour which arises has again disappeared. ('Phil. Trans.,' 1821.)

The iron employed so extensively in modern vessels has created great but generally unsuspected deflexions of the magnetic needle from the position which, under the influence of terrestrial magnetism only, it would take in any given place and at any given time. Numerous vessels have been wrecked in consequence of this alone. Mr. Barlow invented a simple apparatus, which considerably diminishes the danger from this source; and this is the last improvement which navigation, so far as the compass is connected with navigation, has received.

COMPASSES. This term we suppose to be synonymous with *compassers*, instruments by which we compass or go round a space. We shall here only give such a general notion of different kinds of construction as will perhaps suggest the most convenient for any particular purpose.

1. Common Compasses, or Dividers.—These are simply two pointed legs on a common pivot, for transferring distances. For drawing a circle the lower end of one of the legs is removed, and its place supplied by a holder for a pencil, or by a steel pen.

2. Hair Compasses.—One of the legs has a part attached to the upper part by a spring, so that by means of a screw a very small motion may be given to the lower end. The instrument is convenient for very accurate dividing, but must be used with care.

3. Triangular Compasses.—These have three legs and two pivots, so that the three points of a triangle can be at once transferred. The instrument is useful only in rough work, as it is difficult to handle.

4. Proportional Compasses.—These consist of two dividing compasses with a common pivot, which, when open, present vertically opposite angles; consequently, the intervals between the points of one and the other are in the same proportion as the legs of one to the legs of the other. The pivot is a clamping screw, which can be transferred along the interval between the pairs of points, and a scale points out how to adjust the instrument to alter any line, or surface, or solid, in a given proportion. These compasses sometimes have an apparatus for slight adjustment; but on the whole we consider them as an instrument for rough work.

5. Beam Compasses.—This instrument is a cylindrical bar, perpendicular to which, with clamping screws, slide a point and a pencil. The use of it is to describe large circles, or measure large distances, the common compasses being very liable to slip when opened very wide. It is a very safe and sure construction.

A machine for describing a curve passing through three or more points nearly in a straight line is made as follows:—An elastic rod of metal is furnished with a rigid bar on which it can be drawn up by screws, so that the rod shall form an arc, the chord of which is a part of the bar. This may be adjusted so as to pass through the given points when the curve is to be traced along the front of the rod. This is sometimes called a Shipwrights' Bow.

COMPIÈGNE, a town in France, in the department of Oise, on the left bank of the river Oise, just below its junction with the Aisne, is 36 miles E. of Beauvais, and has 9076 inhabitants. The town is ancient; most of the streets are ill-built; and there are few good houses except in the neighbourhood of the palace and in the Rue St.-Corneille. The churches of St.-Jacques and St.-Antoine, and the town-house, are fine buildings, and remarkable for their sculptured decorations; the new theatre and the bridge over the Oise are handsome structures. But the edifice which renders Compiègne eminently worthy of being visited is the magnificent palace built here by Louis XV., according to the designs of the architect Gabriel. It is surrounded by extensive gardens, and near it is a forest containing 37,000 acres. This palace was the residence of Charles IV. of Spain and his queen, during the first part of their captivity in France. Here Napoleon and Maria Louisa, archduchess of Austria, first met on occasion of their marriage in 1810. Hosiery, cotton yarn, and ropes are made, and boats for the navigation of the Oise are built in the town. There is a considerable trade carried on in corn and wood. The town has a college, a tribunal of first instance, and a public library. It was in a sally from this place that Jeanne d'Arc was taken prisoner. The railroad from Paris to St.-Quentin passes through Compiègne.

COMPLEMENT, that magnitude which, with

another, makes up a given magnitude. This is the general meaning of the term; but the most usual specific uses are as follows:—

Complements of the parallelograms about the diagonal of a parallelogram: through a point in the diagonal draw parallels to the sides; the whole is then divided into two parallelograms on the diagonal, and two which only touch the diagonal at one angle. The latter pair are called by Euclid complements to the former.

The complement of an arc or angle is the arc or angle by which it falls short of a quadrant or a right angle.

The complement of a logarithm is the number by which a logarithm falls short of 10: thus, comp. log. 2 is 10 − .30103, or 9.69897.

The arithmetical complement of a number is the number by which it falls short of the next higher decimal denomination. Thus, ar. co. 936 is 1000 − 936, or 64; arith. comp. of 83 is 100 − 83, or 27. Beginning from the left, subtract every figure from 9, up to the last significant figure, which subtract from 10.

COMPOS, or NON COMPOS MENTIS. [Insanity.]

COMPOSITÆ, the largest known natural order of plants (if indeed it is really an order, and not a group of a higher designation), consists of monopetalous Exogens with syngenesious stamens, and an erect solitary ovule in a simple one-celled inferior ovary, the style of which is divided into two arms; the flowers are always arranged in dense heads, or capitula, and are surrounded by one or more external rows of bracts forming an involucre. Professor Lindley regards it as an alliance of several natural orders. It consists of herbs, shrubs, or trees, found in all parts of the world, but assuming an arborescent character only in warm latitudes: they occur in every conceivable variety of situation, are often exceedingly similar to each other in appearance, and have always been, from the birth of botany as a systematic science, the puzzle and reproach of systematists. Many attempts to arrange the species of this order have been made, but none of them succeeded till De Candolle achieved the difficult task of systematising them in an unexceptionable manner. A profound master of his subject in all its bearings, with immense materials at his disposal, with a particularly clear systematic mind, and a sound and solid judgment, he has reduced the whole subject to as satisfactory a state as any part of the vegetable kingdom.

De Candolle divides the whole order into the following eight tribes: Tribe 1, *Vernoniaceæ*. Tribe 2, *Eupatoriaceæ*. Tribe 3, *Asteroideæ*. Tribe 4, *Senecionideæ*. Tribe 5, *Cynareæ*. Tribe 6, *Mutisiaceæ*. Tribe 7, *Nassauvieæ*. Tribe 8, *Cichoraceæ*.

De Candolle estimates Compositæ at one-tenth of the whole vegetable kingdom. They are in some cases soporific, as lettuce and succory; in others, they are diuretic, as various conyzas; some are tonic and stomachic, as wormwood and chamomile; but they are not of great medicinal importance to man, the last-named plants being the most valuable among them. Common artichokes with their succulent receptacles, and Jerusalem artichokes with their succulent tubers, are the only esculents. Many are beautiful objects to look upon, as dahlias, marigolds, coreopsis, asters, &c.

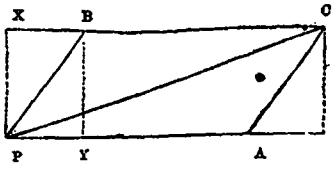
COMPOSITE ORDER. [Civil Architecture.]

COMPOSITION. In the gradual progress of mathematical language, this word has acquired a general meaning, as follows:—Any one magnitude is said to be compounded of two others when it produces the same effect as the other two put together. For instance, if we increase a length in the proportion of 3 to 7, and then increase the result in the proportion of 2 to 5, the original line is increased in the proportion of 3×2 to 7×5, or of 6 to 35. Hence the proportion of 6 to 35 is said to be the proportion compounded of (out of) the proportions of 3 to 7 and 2 to 5.

The effects of which it is in our power to form a distinct conception are of two kinds. 1. Those in which there are only two kinds imaginable, and those two diametrically opposite, with one neutral intermediate state. 2. Those in which the diametrically opposites have an infinite number of intermediate gradations. Loss or gain of money is an instance of the first; change of direction of the second. If, at the rate of an inch to a shilling, gains were measured northward from a given point, and losses southward, we could immediately make it a necessary consequence that the balance, if any, is represented by a line northward or southward, according as it is for or against. But draw a line eastward, and it will readily be admitted that such line will not present itself in any necessary connection with a sum lost or gained, or neither lost nor gained. For, if the latter, why should a line eastward be preferred to a line westward, or in any other direction?

An immense number of modes of composition will readily suggest themselves, in which addition and subtraction are the processes by which composition takes place. If I go three miles northward, and then two miles farther, I go in all $3 + 2$, or 5 miles northward. Other modes, as in the instance first given, will suggest themselves, in which multiplication and division are the compounding processes, and so on ad infinitum. These are all cases in which magnitude only is concerned; but, whenever we have both magnitude and direction, it is plain that we have now both magnitude and direction to consider in the effect. If I go a mile northward and then a mile eastward, the whole effect, as to direction, will be, that I go to the north east; as to magnitude, that I go, not two miles, but only $\sqrt{2}$ miles, or 1.414 miles very nearly. Here is an instance in which the components are represented in magnitude and direction by two sides of a triangle, while the total effect is similarly represented by the third side.

In mechanics, we have to consider the combined effects of different velocities, pressures, momenta, rotations, &c., communicated at the same moment of time to the same body. In all, the law of composition is found to be as follows:—



In what sense soever the actions at P can be represented in magnitude and direction by P A and P B, in that same sense can the joint effect be represented by P C, the diagonal of the parallelogram, in both magnitude and direction: or P A and A C being the actions (A C being equal to P B in magnitude and direction), P C, the third side of the triangle, is the united action. Thus, if at the same instant we communicate motion to P in the directions P A and P B, with velocities P A and P B per second, we thereby merely communicate to P a velocity P C per second, in the direction P C. The same holds of momenta and pressures; and even if we give P two separate rotations, which would separately carry it round the axes P A and P B in angles per second which are in the same proportion as P A and P B, the joint effect is a rotation round the axis P C with an angle per second which is to the angle of P A (or P B) as P C is to P A (or P B).

COMPOST. [MANURE.]

COMPOSTE'LA, SANTIAGO DE, a large town in the province of Galicia in Spain, and an archbishop's see, is situated on a hill near the river Tambro, 300 miles N.W. from Madrid, in 42° 52' N. lat., 8° 27' W. long., and has 28,000 inhabitants. It was formerly the capital of Galicia, but it has lately ceded that honour to Coruña. It has two collegiate and a number of other churches and convents. Besides the great hospital, which is one of the finest in Spain, there are asylums for orphans and the destitute of both sexes. The cathedral, dedicated to the apostle St. James (Santiago), is built in the form of a cross, with 7 gates and 23 chapels, some of which are richly ornamented. It was robbed by the French in 1809. The principal square called Plaza Real, and one or two streets, are good; but the rest are steep, narrow, and ill-paved. The university has a good library, 4 colleges, and faculties of theology, philosophy, law, and medicine. Compostela carries on a considerable trade, and has manufactures of paper, hats, leather, ribands, and lace. The town was formerly visited by great numbers of pilgrims from all parts of Europe, who repaired to the shrine of St. James in the cathedral. (Miñano, *Diccionario Geografico de España.*)

COMPOUND. [COMPOSITION.]

COMPOUND INTEREST. [INTEREST.]

COMPOUND QUANTITIES, in Arithmetic, quantities in which more than one unit is employed, as in 2 pounds, 3 shillings, and 6 pence; 2 miles, 3 yards, and 4 inches.

COMPRESSIBILITY OF WATER. Like almost every other substance, water expands in volume by an increase of temperature, and contracts by a decrease; but it has this peculiar property, that at a temperature expressed by about 40° of Fahrenheit's thermometer it attains a maximum of density. The quantity of water which at 60° would occupy one cubit foot, at 40° occupies only 0.9907 cubic foot; while at the temperatures both of 45° and 35° (its fluidity at the latter temperature being preserved by the avoidance of all agitation) the volume is 0.9991 cubic foot (Gilpin, 'Phil. Trans.,' 1792): the increase of volume at temperatures below 40° is ascribed to some tendency of the water to crystallise while it is still fluid.

The variations produced in the volume by variations of temperature, with other circumstances which show that water has some elasticity, afford arguments that the fluid is capable of being compressed by mechanical means; but direct experiments to ascertain the fact were made by certain philosophers of Florence in 1661, and by Muschenbroek in 1731. In the first of these a hollow globe of silver, and in the other a like globe of gold being filled with water, efforts were made by pressure to alter the form, and consequently to diminish the volume of the globes, when it was found that the water escaped through the pores of the metals. In the year 1762 however Mr. Canton introduced water at a certain temperature into a glass tube, and having, by an application of heat, made the water fill the tube so as to expel the air, he sealed the tube hermetically; then, having reduced the temperature to its former value, he broke off the upper extremity of the tube in order that the atmosphere might press on the top of the column of liquid, when the height of the latter was found to be thereby diminished. The like experiment was tried with alcohol, oil, and mercury; and the fact that these fluids suffered different degrees of diminution in volume proves that the compressions resulted wholly from the weight of the atmosphere which was allowed to enter the tube.

The experiments of Canton show that, under a weight equal to that of an atmospherical column in its ordinary state (29½ inches of mercury), the compressions of the four following fluids, in millionth parts of their volumes, and at a temperature equal to 50°, are—Alcohol, 66; Rain-Water, 46; Sea-Water, 40; and Mercury, 3.

COMPRESSION OF THE BRAIN. [HEAD, INJURIES OF.]

COMPTAT-D'AVIGNON, a county or district in the department of VAUCLUSE in France, which included the city of AVIGNON, the village of Morières, and the parish of Montfavet. It was the property of the Popes from 1348 to 1791, and under them was governed by a vice-legate.

COMPTAT-VENAISSIN, a county or district in the department of VAUCLUSE, contiguous to the preceding, but distinct from it, took its name from its ancient capital Venasque. By a treaty made at Paris in 1229 it was ceded to the Holy See by Raymond VII., Count of Toulouse; but the terms of the treaty were not fulfilled till April 1274, when the county was made over to Gregory X. by Philippe le Hardi, and it continued subject to the Popes till Sept. 14, 1791, when by a decree of the National Assembly it was reunited to France. The chief towns were Carpentras, the seat of government under the papal dominion, Valreas,

availlor, and Vaison. The county was governed by a magistrate styled Recteur, who was assisted by a sort of parliament, which met annually at Carpentras.

COMPTONIA, a genus of plants belonging to the natural order *Myricaceæ*. There is only one species, the *C. asplenifolia*, Sweet Fern. It is a small bush, 3 or 4 feet in height, yielding a powerful aromatic fragrance when rubbed between the fingers. It is a native of the woods and mountains of the United States, where it is a favourite domestic remedy for the cure of diarrhœa. It possesses tonic and astringent properties.

COMPURGA'TOR. A practice once prevailed of permitting persons accused of certain crimes to clear themselves by purgation. In these cases the accused party formally swore to his innocence, and, in corroboration of his oath, twelve other persons, who knew him, swore that they believed in their consciences that he stated the truth. These twelve persons were called Compurgators. This proceeding appears to have existed among the Saxons, and in process of time it came into use in England in civil cases of simple contract debts.

COMPUTATION. We give here the mere rules by which a person may form good habits of computation, referring to the articles on *Computation* in the supplement of the 'Penny Cyclopædia,' in the 'Companion to the Almanac' for 1844, or in the Appendix to De Morgan's Arithmetic.

1. Presuming that the learner can count one, two, three, &c., as fast as he can speak the words, he must then try if he can do the same backwards, as fifty, forty-nine, forty-eight, forty-seven, &c. He must then practise counting forward—by two at a time, as in 2, 4, 6, &c., 1, 3, 5, &c.; by three at a time, as in 1, 4, 7, &c., 2, 5, 8, &c., 3, 6, 9, &c.; by four at a time, as in 1, 5, 9, &c., 2, 6, 10, &c.; and so on up to 11 or 12 at a time. The same should be done backwards, as in the following by sevens, 90, 83, 76, 69, &c. In doing this he must not use any description, either vocal or mental; it must not be 22 and 6 are 28 and 6 are 34, &c.; but 22, 28, 34, &c. These various processes should be carried to or from 100 at least.

2. Proceed to form with rapidity the number which must be added to a given number to make up the next number which ends with a given digit. Thus, one of the questions asked, at its fullest length, is 'Given 38 and 4, how much must be added to 38 to give the next number that ends with 4?' But all that must be repeated, orally or mentally, is '38 and six are forty-*four*.' Write down a row of numbers, as in

7 2 9 6 3 2 8 4 1

and practise thus:—72 and 7 are 79, 29 and 7 are 36, 96 and 7 are 103, 63 and 9 are 72, &c.; taking 72, 29, 96, &c. for the successive lesser numbers, and 9, 6, 3, &c. for the successive unit figures of the greater numbers.

3. Endeavour occasionally, in the exercise immediately preceding, and in those which follow, to fix the thoughts particularly upon the *tens* of the result. It will generally happen that the units are immediately to be written down and discarded, while the tens are to be retained in the memory. Practise repeating a number, so as while repeating it to write down the units and think of the tens: thus, in 76, at the moment of writing down 6, think of 7.

4. Learn the multiplication table up to 12 times 12, but not with the usual practice of wording all the results, as in '7 times 8 make 56,' '4 times 5 are 20,' &c. The table must be so learnt that the two factors suggest the product instantaneously. Thus, 8 and 9 must give 72 the instant they come together in the mind, and so on. Take a row of numbers as before, and, looking at the successive pairs, repeat the products. Thus, 2 9 8 7 4 3 5, &c. is to suggest 18, 72, 56, 28, 12, 15, &c. as fast as the words can be spoken. Those who have been accustomed to learn the multiplication table from the half of it, always putting either the greater factor first, or else the lesser, must now accustom themselves to the whole: 5 and 9, or 9 and 5, must suggest 45 with equal ease.

5. Augment the last exercise as follows:—Having three digits, learn to pass in thought immediately to the product or the first two augmented by the third; thus, 7, 9, and 8 must lead to 7 times 9 increased by 8, or 71. Take a row of figures, as before, say 2497163, &c., which must be made the means of suggesting immediately 17, 43, 64, 13, 9, &c. The usual repetition, 'twice 4 are 8 and 9 are 17,' &c. must not be tolerated for one moment.

6. Acquire the power of combining the fifth and second exercises as follows:—Having four digits, learn to add the third to the product of the first and second, and to pass on to the next number which has the fourth in its unit's place. Thus, with 7, 8, 5, and 9, think of 61 (7 times 8 and 5) as in the last exercise, and as in the second, get '61 and 9 are 70.' Repeat only as much as is in the last phrase, dealing with the first three numbers by the habit acquired in the last exercise. Thus, with the row of numbers 19728663, &c. should be rapidly suggested—16 and 6 are 22, 65 and 3 are 68, 22 and 4 are 26, 22 and 4 are 26, 54 and 9 are 63, &c.

7. Having four numbers, deal with the first three as in the fifth exercise, and then, repeating the result, add the fourth. Thus, from 2, 7, 5, 8, get 19 and 8 are 27. Thus, the row of figures 7984361, &c. must give—71 and 4 are 75, 76 and 3 are 79, 35 and 6 are 41, 18 and 1 are 19.

8. Having a digit and a number of two places, learn to arrive speedily and with few words at the number of times which the second contains the first (when not more than 9), and at the remainder. Thus, '7 in 53, 7 times and 4,' 8 in 29, 8 times and 5,' &c.

We now take the four rules, insisting on the details of the mode of performing each of them, and presuming the usual process to be known.

Numeration.—Learn to distinguish tens, hundreds, &c. not by the places in which their digits come, but by the numbers of places which come after those places. Instead of connecting thousands in the mind with the *fourth* place, connect them with *three places cut off*. Thus 176493 has 1764 hundreds, 176 thousands, &c.

Addition.—Add as in exercise 1: thus, if the

figures were to be 7 2 3 4, &c., it should not be 7 and 2 are 9 and 3 are 12 and 4 are 16, &c., but 7, 9, 12, 16, &c. Dwell upon the tens to be carried, in writing down the units. In the following question, every word that should be repeated, orally or mentally, is written down, and each figure that is to be written down is marked with an accent; each ten that is to be dwelt on for a moment is in Italics:—

27649	8, 17, 22, 30, 36, *forty*-five′
9276	10, 19, 20, 27, *thirty*-one′
308	11, 18, 24, 27, 29, *thirty*-five′
44615	3, 5, 9, 18, *twenty*-five′
2799	3, 7, nine′.
10868	
95515	

Let the method of verification be simply taking the columns in the opposite order, or downwards, as 9, 15, 23, 28, 37, *forty*-five′, &c.

Subtraction.—Let the several subtractions be made by mental recovery of additions as in exercise 2: not '7 from 16 leaves 9,' but '7 and 9,' not repeating 16, which is unnecessary, inasmuch as, when 9 is found, 16 is done with, and the carringe of one is all that is to be remembered. The following detail has every word of the process:—

274631807	8 and 9′; 5 and 5′; 10 and 8′; 9
95318948	and 2′; 2 and 1′; 3 and 3′; 5 and
179312859	9′; 10 and 7′; 1 and 1′.

Multiplication.—Apply the exercises 4 and 5 to the usual process. Here, as before, the detail given has every word which need be repeated. The figures to be written down are accented; all others are carried.

7296	54′, 86′, 26′, 6′5′; 30′, 48′, 14′
859	3′6′; 48′, 76′, 23′, 5′8′; 4′; 6′;
65664	8, 16, 22′; 8, 12, 17′; 4, 10,
36480	16′; 9, 12′; 6′.
58368	
6267264	

Division.—This rule is considerably shortened, and (in our opinion, though we think many would differ from us) increased in safety, by performing each subtraction without setting down the multiplication. As a preliminary, suppose it required to subtract 7 times 29398 from 410843. Beginning with 7 × 8, instead of putting it down as 56, look at 3 and pass from 56 to 63, writing down the 7 and carrying the 6 tens just used. Take these 6 tens and 7 times 9, giving 69, and make them up to 74, putting down the 5, and carrying 7. All that need be repeated is as follows, dwelling on the tens carried:—

From 410843	56 and 7′ make 63; 69 and 5′
Take 29398 × 7	make 74; 28 and 0′ make
205057	28; 65 and 5′ make 70; 21
	and 0′ make 21; 2 and 2′
	make 4.

Suppose 3293614829 is to be divided by 47698. Instead of the usual plan, write the divisor on the right, or the quotient on the left: at any rate, the divisor and quotient should be near one another.

Divisor 47698)3293614829
Quotient 69051 431734
245282
67929
20231 remainder.

The work is as follows:—The first quotient figure being 6, subtract 6 times 47698 from 329361, thus: 48 and 3′ are 51, 59 and 7′ are 66, 42 and 1′ are 43, 46 and 3′ are 49, 28 and 4′ are 32. The 4 being brought down, and 9 ascertained to be the next quotient figure, we have 72 and 2′ are 74, 88 and 5′ are 93, 63 and 4′ are 67, 69 and 2′ are 71, 43 and 0 (unnecessary) are 43. Then 8 and 2 are brought down, 0 and 5 written as quotient figures, and 40 and 2′ are 42, 49 and 9′ are 58, 35 and 7′ are 42, 39 and 6′ are 45, 24 and 0 are 24. The last quotient figure is 1, and 8 and 1 are 9, 9 and 3′ are 12; 7 and 2′ are 9, 7 and 0′ are 7, 4 and 2′ are 6.

CONCA, SEBASTIANO (Cavaliere), was born at Gaeta, in the kingdom of Naples, in 1676. He was the pupil of Solimena at Naples, but, attracted to Rome in 1706 by the great reputation of the Roman masters, he determined to settle there. Conca was one of the imitators of Pietro da Cortona, and possessed to a great degree the facilities of that master: he was ready, rapid, and superficial. His works are numerous in Rome and in the Roman States. He died at Naples in 1764.

CONCAN, a district of Hindustan, comprising the whole of the western coast from Surat, 21° 12′ N. lat. to the territory of the raja of Sawunt Waree, 15° 55′ N. lat., and extending from the sea to the Western Ghauts. The length is about 340 miles, and the average width about 35 miles. It is nearly all British territory, and is included in the presidency of Bombay. The district is crossed by many small rivers which have a short course from the Ghauts to the sea, and contains along the coast numerous bays and harbours, which however afford little facility to commerce. The surface is generally rough, and intersected by rocky hills, but has many fertile places, which yield abundant harvests of rice. The entire population is about 1,000,000, chiefly Hindoos.

CONCAVE and CONVEX. A curve or surface is concave on the side on which straight lines drawn from point to point in it fall between the curve or surface and the spectator; that side is convex on which the curve or surface falls between such lines and the spectator. A surface may be either entirely concave, as the inside of a sphere, or entirely convex, as the outside; or concave in some directions and convex in others, as the surface of a dice box.

CONCENTRIC, having the same centre; thus concentric circles are those described about the same point.

CONCEPCION, a town of Chile, about 7 miles from the shores of an extensive bay of the same name. It is situated about two miles north of the river Biobio, and six miles from its mouth. It occupies nearly a square mile, and is quite open, without any defences. The town has been frequently plundered by the Araucanians, and has often suffered from earthquakes. In February 1835, almost every house was thrown down, and

it still remains nearly all in ruins. Timber and cattle are exported.

CONCERT, in Music, a performance of several pieces of either vocal or instrumental music, but commonly of both, by different voices, and on various instruments. The earliest concert of which we find any record is that of the Filarmonici, at Vicenza, which must have been founded previously to 1565. But to England is due the credit of having instituted the first regular series of concerts, under the title of The Academy of Ancient Music, which had its birth in 1710, and continued to exist upwards of eighty years. The Concert Spirituel of Paris was founded in 1725, and continued till the French Revolution. The year 1776 is distinguished in musical history by the institution of the Concert of Ancient Music, which has ever since maintained a distinguished position. Salomon's Concerts, commenced in 1791, were continued till 1796. The Philharmonic Concert was commenced in 1813. A large number of minor concerts, some of them only short-lived, have been established during the present century; and individual musicians are accustomed to give 'benefit concerts' annually.

CONCERT-PITCH, in Music, is the *pitch*—the degree of acuteness or gravity—generally adopted for some one given note, and by which every other note is of course governed. [Acoustics; Tuning.]

CONCERTI'NA, a musical instrument recently invented by Professor Wheatstone, the principle of which is explained under the word Accordion. One variety is called the Double-Action Concertina, because two springs are given to each note, in order that the same sound may be produced whether the bellows be pressed in or drawn out. The Single-Action Concertina has but one spring, or tongue, for each note, yielding a sound only when the bellows is moved inwards; that is, pressed. There are treble, tenor, and base concertinas, embracing different portions of the musical scale. The concertina is far more complete as an instrument than the accordion.

CONCERTO, in Music, a composition in which many performers play in concert, but in which some one or two instruments take rather a more prominent part than the others. Such are the concertos of Corelli and Handel. But from the latter part of the last century the term has been applied to the species of composition written for one principal instrument, with accompaniments for a full orchestra. Such are the piano-forte concertos of Mozart, Beethoven, &c.

CONCHA'CEA, M. de Blainville's eighth family of his third order (*Lamellibranchiata*) of his third class (*Acephalophora*) of Mollusks (*Malacozoa*). Cuvier terms this family *Les Cardiacés*, and places it as the fourth family of the Acephalous Testaceous Mollusks. ('Règne Anim.,' vol. iii., p. 144.) The following is De Blainville's definition:—*Mantle* closed before, above, and behind, where it is prolonged by two tubes, more or less long, extensile, and either separated or united one is ejective, the other respiratory). Abdomen constantly provided with a foot, of a slightly variable from, serving for locomotion (it is exserted inferiorly). *Shell* nearly always regular, entirely closed, equivalve; umbones curved forwards; hinge dorsal, complete, that is to say with teeth and a ligament (Rang says hinge *almost always* with teeth); the ligament is either external or internal, short and swollen. Two distinct muscular impressions, united below by a ligule more or less large, and very often inflected, or returning backwards.

All the animals of this family live plunged more or less deeply in the sand or mud; but still they are able to come out of it sometimes. All, with few exceptions, are marine. We may enumerate the following *genera*.

1. Hinge linear and toothless; fresh-water.

Iridina (Rang).—Locality, the rivers of warm climates, as the Nile, and those of China.

2. Hinge with teeth.

a, Regular; hinge-teeth lateral and wide apart; marine.

Cardium (Cockle).—Locality, the seas of almost every warm and temperate climate. Living species very numerous, as are also the fossil species, found in the tertiary formations. ('Proceeds. Zool. Soc.,' 1840, p. 105.)

Capsa.—Locality, temperate and warm seas.

Donax.—Locality, almost universal. Deshayes enumerates 15 fossil species, and one living and fossil (tertiary strata).

Gratelupia.—Fossil only. Marine beds (tertiary) of Mérignac.

Tellina and *Tellinides*, regarded by De Blainville as only one genus.—Species numerous. Locality, the warmer seas. Deshayes enumerates 54 fossil species; and 12 both living and fossil (tertiary).

Amphidesma.—Locality, extensive. Species, numerous. ('Proceeds. Zool. Soc.,' 1832, p. 199, et seq., and 1844, pp. 17 and 162, for the description of several new species brought home by Mr. Cuming.)

Mesodesma (Deshayes).

Cumingia (G. B. Sowerby).—Locality, tropical seas.

Mactra.— Locality, almost universal. Deshayes enumerates 14 fossil species (tertiary), and four both living and fossil.

Crassatella.—Locality, seas of New Holland. Deshayes enumerates 24 fossil species (tertiary).

CONCHI'FERA, Lamarck's name for the *Acéphales Testacés à Quatre Feuillets Branchiaux* of Cuvier, including also the *Brachiopoda*, which forms Cuvier's fifth class of Mollusks. (See 'Trans. Zool. Soc.,' vol. i., for an account of the anatomy of *Terebratula*.)

Lamarck divided his *Conchifera* into two great orders, the *Dimyaria*, furnished with two adductor muscles acting upon the valves of the shell, and *Monomyaria*, furnished with one adductor muscle only. M. Deshayes would separate the class into three sub-classes:—1, *Polymyaria*, or *Brachiopoda*; 2, *Dimyaria*; 3, *Monomyaria*. The Brachiopoda will however, we believe, be regarded by most as the constituents of a class *per se*. [Brachiopoda.] Leaving, then, the *Brachiopoda* out of the question, the following condensed outline of the organisation of the *Conchifera* may be admissible:—

Body wrapped in a *mantle;* the whole animal being inclosed in two shelly valves.—Examples, oyster, cockle, mussel, &c.

Digestive System. — *Mouth* without any hard parts, situated anteriorly; in the Dimyarians concealed between the foot and the anterior retractor muscle (mussels); in the Monomyarians, under a sort of hood made by the mantle (scallops, oysters). *Labial Palpi* in the form of triangular leaflets. *Stomach* and *œsophagus* variable. *Intestinal canal* convoluted within the liver and ovary. *Liver* extensive.

Absorbent System supposed to be identical with the venous system, the veins performing the office of absorbing vessels.

Circulating and Respiratory System. — An arterial ventricle, and a venous auricle: in some tribes there are two auricles, one for each pair of branchiæ; and in *Arca* there are two auricles and two ventricles distinct on opposite sides of the body. *Branchiæ*, or gills, 4 minutely *ciliated* fringes known in the oyster as the *beard*. These *branchiæ*, by the incessant action of the *cilia*, not only purify the circulating fluid, but impel particles of food to the mouth. The *branchiæ* appear to be filamentous in their structure: these filaments are minute vessels running a parallel course; they are enveloped in a delicate tissue, and, communicating with each other, ultimately emerge into two principal trunks, which convey the purified blood to the auricular cavity of the heart, whence it passes through two canals to the ventricle, and is thence distributed by arterial ramifications through the body.

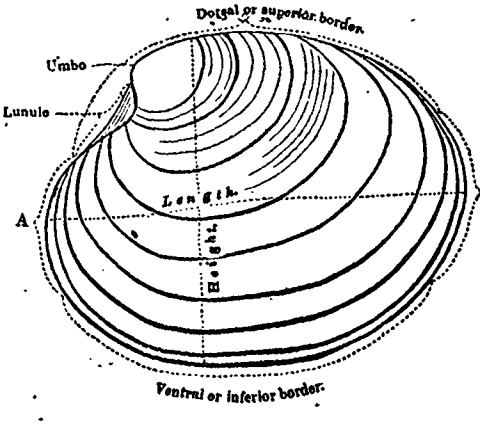
With respect to the *mantle*, in some instances, as the scallop and others, its circumference is free and unconnected except at the hinge which unites the two valves of the shell in other cases: the edges of the mantle are united to each other, with an opening for the extrusion of the foot, while posteriorly it is produced in the form of two contractile tubes, or *siphons*, varying in length in different species; sometimes they are separate, sometimes conjoined; the lower siphon is destined to convey water to the branchiæ; the upper siphon is for the passage of excrementitious matters; the apertures of both are fringed with papillæ of great sensibility.

Progression.—In many instances the shell is permanently attached to the rock which gives it support; but in some species locomotion is performed by successive flappings of the expanded valves, a retrograde movement being effected by repeated jerks; in other cases, the animals protrude a muscular foot, which enables them to crawl along by a succession of impulses, to burrow in the sand, or, as in the cockle, even to leap. At the base of the foot in many species, as the mussel and Pinna, there is rooted a bundle of fibres called the *Byssus*, by means of which the animals moor themselves to stones or rocks. [Byssus.]

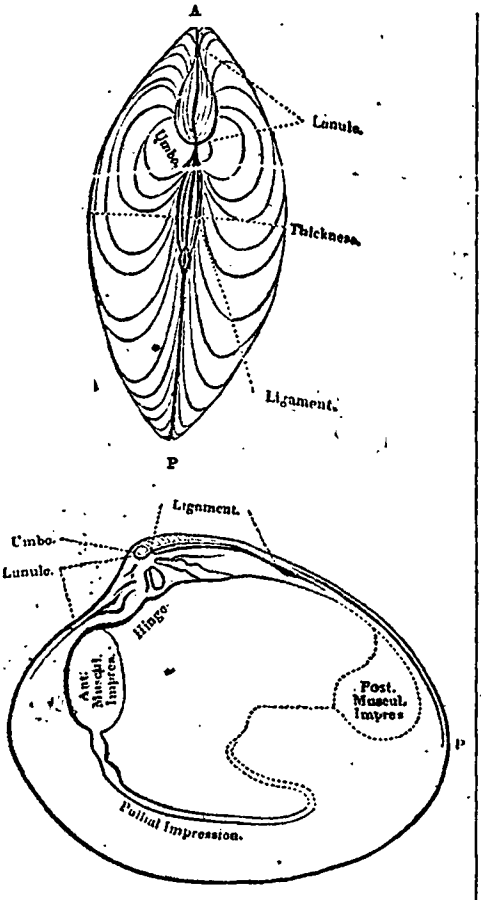
Reproduction.—Oviparous; ovary extensive. In many species the eggs at their exclusion are not abandoned at once, but are deposited between the membranes of the branchial laminæ, where they undergo a kind of incubation. In some, the shell is developed before the associated brood quit their nidus. In the oyster, the brood are involved in viscid slime: this is the *spat* of the oyster, and the involving slime constitutes the first nutriment of the imperfect young. No male organs have been discovered; but, as many of the Conchifera are gregarious, it is by no means improbable that this congregation may be a necessary condition for the fecundation of the ova, by a mutual diffusion of some influence analogous to that of the milt in fishes. According to M. Prevost, it would appear that no propagation takes place without an assemblage of these animals upon the same spot.

Nervous system. — Very simple; heteroganglinte. *Senses* confined to feeling and tasting. 'Not having any especial organs for seeing, hearing, or smelling,' says Sir Anthony Carlisle, speaking of the common oyster, in his Hunterian Oration (1826), 'the creature is limited to perceive no other impressions but those of immediate contact; and yet every part of its exterior seems to be sensible of light, sounds, odours, and liquid stimulants.' It is said that in clear water oysters may be seen to close their shells whenever the shadow of a boat passes over them.

Shell.—The valves of the shell, composed of carbonate of lime, are secreted by the thickened margin of the *mantle*, which at this part is glandular; and the addition of successive layers is in general very distinctly marked on the external surface. The valves are lined internally by *nacre*, or mother of pearl, secreted by the external surface of the mantle and not by its edge. [Shell, Pearl.] The hinge is formed by the inner layer of the shell; it varies in extent and form, and is secured by a highly elastic ligament, which keeps the valves open as long as the adductor muscle or muscles are relaxed. The common oyster will serve as an example of the *Monomyarians*. The subjoined cuts will convey a general idea of the *Dimyarians*, their shell, and its muscular impressions.



A, Anterior, or oral extremity.
P, Posterior, or anal extremity.



Shell of Cytherœa.

(Poli, Cuvier, Lamarck, De Blainville, Rang, Deshayes, and the article *Conchifera* in the *Encyclopœdia of Anatomy and Physiology*.)

CONCHOID (κογχοειδής, resembling a shell). This name was given by Nicomédes, in the second century, to a curve, by which he proposed the finding of two mean proportionals, and the duplication of the cube.

This curve is described by a revolving line, which passes through a fixed point, and is always produced to meet a certain fixed line. On the revolving line, from the point in which it meets the fixed line, set off a given line both ways. The two points thus laid down trace out the upper and lower conchoid, two different branches of the same curve.

CONCHOLOGY (*Conchyliologie* of the French), the science which teaches the arrangement of the shells of testaceous mollusks into classes, families, genera, and species; its zoological and geological importance is now fully admitted, and shells (the external skeletons of mollusk) are no longer regarded as mere toys, pleasing to the eye, but unworthy of serious study. [MALACOLOGY.]

CONCLAVE, a Latin word, which signifies a private room, is the name given to the assembly of cardinals when they meet for the purpose of electing a pope. Immediately after the funeral of a pope, the cardinals proceed to one of the pontifical palaces, which is generally the Vatican, where rooms have been prepared for each of them, and where they remain shut up till the election has taken place. They meet once a day in the chapel of the palace, where a scrutiny is made of their votes, which are written, and placed in an urn: this is repeated every day till two-thirds at least of the votes are in favour of one candidate for the pontifical chair, who is then considered as duly elected. During the conclave the ambassadors of Austria, France, and Spain, have each a right to put their veto upon one particular cardinal, whose election would not be acceptable to their respective courts. The new pope being elected, and his assent being given, he proceeds to dress himself in his pontifical robes; after which he gives his blessing to the cardinals, who give him the osculum pacis (kiss of peace).

CONCORD, in Music, two combined sounds which are universally agreeable to the ear. When two sounds are due to vibrations, the relative frequency of which is in the ratios of 2 to 1, 3 to 2, 5 to 4, or 5 to 3, they form the concords of the *octave*, the *fifth*, the *third*, and the *sixth*, respectively. The ratio of 4 to 3 furnishes the *fourth*, which is by musicians sometimes treated as a concord, and sometimes as a discord.

CONCORDANCE, 'a book which shows in how many texts of Scripture any word occurs.' (Dr. Johnson.) More particularly, it is a dictionary or index of all the important words in the Bible, alphabetically arranged for the purpose of finding passages and of comparing the various significations of words. The compiler of the first concordance in any language was Hugo de St. Caro, or Cardinal Hugo, who died in 1262. The earliest concordance of the Hebrew text is by Rabbi Mordecai Nathan, printed at Venice in 1523. There are many other concordances of the Hebrew text by Buxtorf, Dr. John Taylor, Noldius, &c.; of the Greek Septuagint, by Kircher and Tromm; of the Greek New Testament there are several, of which the best is by Dr. Williams, 4to., 1767. Of the Latin Vulgate the best is that founded on the one by Cardinal Hugo, and reprinted at Avignon in 1786.

The first Concordance to the English New Testament was 'imprinted by Thomas Gybson' previous to the year 1540. The first to the entire Bible is by 'Jhon Marbeck,' London, in folio, 1550. Subsequent to these there have been several; but by far the most complete and valuable is the one by Alexander Cruden, the merits of which are too well known to require any remark. The first edition was in 4to. 1737; but the most correct is that of 1810. For further details respecting Concordances, see Watt's *Bibliotheca Britanica*, and Orme's *Bibliotheca Biblica*.

CONCORDAT is the name given to a formal agreement between the see of Rome and any foreign government, by which the ecclesiastical discipline of the Roman Catholic clergy and the management of the churches and benefices within the territory of that government are regulated. It is, in fact, a diplomatic negotiation and treaty concerning ecclesiastical affairs, which includes also temporalities belonging to the church. The frequent disputes between the popes and the various princes of Europe touching the right of appointing to vacant sees and benefices, and also about the claims of the see of Rome to part, or in some cases the whole, of the revenues of vacant sees and livings, and of the first-fruits and tenths of those which it had filled, as well as the immunities claimed in various times and countries by the clergy and supported by Rome, such as exemption from taxation and from the jurisdiction of the secular courts, the right of asylum for criminals in the churches, and other similar claims —all these have given occasion to concordats between the popes and particular states, in order to draw a line between the secular and ecclesiastical jurisdictions, and thus put an end to controversy and scandal.

Concordats have become most frequent since the middle of the 18th century, an epoch from which the European governments have made themselves more independent of the ecclesiastical power, and the popes have been for the most part men of an enlightened and conciliatory spirit. The most celebrated concordat is that agreed upon between Cardinal Consalvi, in the name of Pius VII., and the First Consul Bonaparte, in July 1801. By it the head of the state had the nomination to the vacant sees, but the pope was to confer canonical institution, and the bishops had the appointment to the parishes in their respective dioceses, subject however to the approbation of the government. The clergy became subject in temporal matters to the civil power, just like laymen. All immunities, ecclesiastical courts, and jurisdictions were abolished in France, and even the regulations of the public worship and religious ceremonies, and the pastoral addresses of the clergy, were placed under the control of the secular authorities. Most of these provisions remain in force in France to the present day.

CONCRETE, *concrétum*, in Philology and Metaphysics, signifies a quality accompanied with its particular subject, without any mental separation or abstraction, as learned, long, wise, round. It is therefore directly opposed to *abstract*, which denotes a quality conceived generally and separately, without reference to any object to which it belongs, as learning, length, wisdom, roundness. Thus the names of classes are abstract, and the names of individuals concrete. The following remark is from Locke's Essay (b. 3, c. 8, sec. i.)—'This distinction of names shows us the difference of our ideas; for, if we observe them, we shall find that our simple ideas have all abstract as well as concrete names, the one a substantive, the other an adjective, as whiteness, white, sweetness, sweet.'

CONCUBINAGE, among the Romans, was the cohabitation of a man with a woman to whom he was not united by marriage. The union of concubinage seems to have been commonly formed between a man and his liberated female slave. It was not marriage, because it was not the object of the parties to marry: it differed from all other intercourse of the sexes in being a permanent cohabitation.

In Roman inscriptions we find instances of a woman raising a monument to her deceased companion, and calling herself his concubina. Several instances are recorded of Roman emperors who, after the death of their wives, took a concubine instead of contracting a legal marriage; Vespasian, Antoninus Pius, and the philosopher Marcus Aurelius. The object of this union was, that the father might not beget children who would have the same rights as his children by his wife; for, as concubinatus was not marriage, the children of such a union were not lawful children.

In Germany, among the reigning families, a left-handed marriage (Trauung an die Linke Hand, or Morganatische Ehe) sometimes occurs. This kind of marriage resembles the Roman concubinage, as well in its conditions as its consequences. ('Dig.' 25, tit. 5.)

CONCUSSION OF THE BRAIN. [HEAD, INJURIES OF THE.]

CONDAMINE, LA. [LA CONDAMINE.]

CONDAPILLY. [CIRCARS.]

CONDE'-SUR-ESCAUT. [NORD.]

CONDE'-SUR-NOIREAU. [CALVADOS.]

CONDE', LOUIS II. DE BOURBON, PRINCE DE, born at Paris in 1621, was grandson of Henri I. (a branch of the house of Bourbon), and cousin of Henri of Navarre (afterwards Henri IV.).

Louis II., Prince of Condé, has been styled the Great on account of his military abilities and great success. At the age of 22 he won the battle of Rocroi in Flanders, 1643, against a superior Spanish force, and fought several other battles in Flanders and in Catalonia. When the civil war of the Fronde broke out at Paris, Condé was courted by both parties, and served both in succession. He was the means of bringing back young Louis XIV., the queen mother, and Cardinal Mazarin, into Paris, in August 1649. He afterwards quarrelled with the cardinal, was arrested, and imprisoned. On obtaining his release he joined the adverse party, and after driving Turenne from Paris, and forcing the cardinal to resign, he retired to Flanders, where he served for several years in the Spanish armies. He fought, in 1654, at Arras against Turenne, who obliged him to retire, but the retreat was effected with great skill. In 1656 Condé, with Don Juan of Austria, defeated the Marshal de la Ferté, and obliged Turenne to retire from before Valenciennes. In 1658 Condé was defeated by Turenne near Dunkerque, which town was taken by Louis XIV., and given up to the English, according to an agreement with Cromwell. By the peace of the Bidasoa, 1659, Condé was reinstated in all his honours with a full amnesty. In 1672 Louis, having declared war against Holland, Condé commanded one of the corps d'armée which invaded that country; he took Wesel, and was wounded

at the passage of the Rhine. In 1674 he gained the bloody battle of Senef, in Flanders, against the Prince of Orange (William III. of England), and relieved Oudenaarde. In 1675, after Turenne was killed near Sassbach, Condé took the command of his army, and obliged Marshal Montecuculi, who commanded the imperial troops, to retire. This was Condé's last campaign. Being tormented by the gout, he left the service, and retired to his estate of Chantilly, where he spent his latter years in the society of men of letters. He died at Fontainbleau in 1686.

CONDENSATION. [EXPANSION.]

CONDENSER, a vessel employed to facilitate the liquefaction of aqueous or spirituous vapours, by exposing them to the cooling effect of a current of water, which may be either injected immediately upon or among the vapour, or, where it is required to keep the condensing water and the product of condensation distinct, separated from the vapour by a thin partition of metal. In the latter case, copper is the metal most generally employed, on account of the rapidity with which it conducts heat, and the facility with which it may be fashioned into thin sheets adapted for the purpose. [STEAM-ENGINE; STEAM-VESSEL; DISTILLATION.]

CONDENSER OF ELECTRICITY. Any apparatus by which the electric fluid can be accumulated may be so called, and thus every electric or galvanic battery is to be considered as a condenser; but the term is applied chiefly to such instruments as are employed to collect and render sensible very small quantities of the fluid.

Many different kinds of condensers of electricity have been invented, but the principle upon which they are constructed is nearly the same; thus, if a thin circular plate of metal, having attached to its circumference a glass handle, by which it may be insulated when held in the hand, be made to receive a small quantity of fluid (suppose it to be vitreous) from the conductor of an electrical machine with which it may be put in connection by a wire, and then a similar plate of metal, connected with the earth by being held in the hand or supported on a pillar of metal, be brought directly under it and so near as almost to touch it, the nearest surfaces of both having been covered with a thin coat of resinous varnish, the electricity of the latter plate will be decomposed, the vitreous portion (in the case supposed) flowing to the earth, and the resinous portion being attracted by the fluid in the plate which is connected with the conductor to the upper surface of the other plate. This resinous fluid now attracts more of the vitreous fluid from the conductor to the under surface of the plate in connection with it, and the latter fluid further decomposes the free electricity in the former plate, thus causing in it a new repulsion of the vitreous fluid, and a new attraction of the resinous fluid to its upper surface. The like process continues till an equilibrium is produced between the vitreous fluid supplied by the conductor and the resinous fluid which is drawn from the earth, when the plate which is connected with the conductor contains a quantity of vitreous fluid in a condensed state.

CONDILLAC, ETIENNE BONNOT DE, was born at Grenoble in 1715, and was distinguished at an early age for his taste for metaphysical inquiries. The works of Locke chiefly attracted his attention, and caused him to publish, in the year 1746, his 'Essai sur l'Origine des Connoissances Humaines,' a work intended to promulgate principles founded on those of the English philosopher, and in 1749 his second work, the 'Traité des Systèmes,' which was designed to oppose the theories of Leibnitz, Spinosa, and others, as based upon abstract principles, rather than what he conceived the more solid foundation of experience. His third work, 'Traité des Sensations,' is his master-piece. His works seem to have made little impression on the mass of society in his time, but he was much sought after by men of high attainments, and his celebrity spread so far that he was appointed preceptor to the Prince of Parma. In this capacity he published his 'Cours d'Etudes,' divided into 'l'Art d'Ecrire,' l'Art de Raisonner, l'Art de Penser,' and 'Histoire Générale des Hommes et des Empires,' a series of works calculated to promote his own philosophical views. Having completed the education of his pupil, he retired to philosophical meditations. In the year 1768 he was admitted a member of the academy in the room of Abbé l'Olivet. His labours only terminated with his life, as he published his 'Logique' only a few months previous to his death, which happened in the year 1780. His 'Langue des Calculs,' a posthumous work, did not appear till the year 1798.

CONDIMENTS. [AROMATICS.]

CONDITION, in Mathematics, is used in nearly the same sense as in common life. Thus the proposition, to describe an equilateral triangle upon a given straight line, is not to describe *any* triangle, but a triangle under the following *conditions*—that it must be equilateral, and that it must have a given line for its base.

An *equation of condition* means an equation which will not always be true, but requires certain conditions to be satisfied, and is distinguished from an *identical equation* or one which is true independently of all conditions.

CONDITION. When a man declares his will, he can limit it by a condition. A condition is that addition to the expression of a person's will by which he makes the effect of his will depend on some uncertain and future event. It must therefore not be an event contemporaneous with the declaration of the will nor prior to it; and it must be an event which at the time of the declaration of the will is one that may happen or may not happen. If the event is one that certainly will happen or will not happen, it is not a real condition; as if a legacy should be given to a man provided he shall do something which is impossible. Conditions occur most commonly in the case of legal agreements, whether they are called contracts [CONTRACT] or by any other name, and in the case of testaments. Conditions may be called necessary, which must of necessity be fulfilled. Those which cannot be fulfilled are impossible. But neither of these are proper conditions, for they do not contain that which is the essence of

all conditions, uncertainty of the event. The general nature of conditions consists in the dependence of a right upon an uncertain event. This event may be either the commencement of the right, or it may terminate the right. If it is the commencement of the right, the condition is suspensive, or, according to the language of the English law, precedent. If it is the termination of a right, it is called resolutive, or, in the English law, subsequent. The condition precedent is most common. Immoral conditions, that is, such conditions as a court, in accordance with the positive morality of a country, shall declare to be immoral, are like impossible conditions as to their legal effect. A great part of the old English doctrine of conditions applies to estates in land. (Littleton, s. 325, &c., 'Of Estates upon Conditions.')

Before the Statute of Westminster 2, 'De Donis Conditionalibus' if lands were given to a man and the heirs of his body, as soon as he had issue of his body, this fee-simple conditional became for some purposes, and among them for alienation, an absolute fee-simple. The effect of this statute was to convert conditional fee-simples into estates tail.

Conditions, in English law, were of feudal origin. The rents and services of the feudatory were considered as conditions essentially annexed to his fief, and were called conditions in law, or implied conditions. The neglect of these conditions was a forfeiture of the fief to the lord of whom the tenant held his lands. Expressed conditions, or conditions in deed, were subsequently introduced. But the doctrine of conditions has been extended to all such cases as the complicated relations of society require, and, as in the Roman law, so now in the law of England, conditions may form a part of every written instrument by which men regulate their dealings with one another.

Those conditions which are of most practical importance are the conditions of Bonds, Leases, Contracts, Mortgages, and Wills, and particularly in the case of Legacies.

As to conditional limitations of real property, and the difference between them and remainders and conditions, see Fearne's *Essay on Contingent Remainders;* and Butler's note on Co. Litt., note 94. The subject of Conditions is well explained in Savigny's *System des heutigen Römischen Rechts,* vol. iii.

CONDITION OF A BOND. [BOND.]

CONDOM, a town in the department of Gers in France, situated on the river Baise, a tributary of the Garonne, 32 miles N.W. from Auch, stands in 43° 58′ N. lat. and 0° 22′ E. long., and has 7000 inhabitants. The town is quite surrounded with vineyards, and has a considerable trade in wine and brandy; but the chief trade is in wheat and flour, ground in the numerous corn mills on the Baise. Leather, woollen yarn, corks, paper, tiles, quills enter largely into the commerce of the place. The town is ill-built, but is improving every year; in the most central part is a very good square, on one side of which there is an elegant Gothic church. The ramparts are planted and laid out as promenades, and in the environs there are many pretty country houses. Condom has a tribunal of first instance and a college.

CONDOR, or CUNTUR, one of the largest of the Vulture tribe (*Vulturidæ*), of whose size and strength many exaggerated accounts were formerly current.

The Condor (*Sarcoramphus Gryphus*) is a native of the Andes of South America, and is characterised by fleshy caruncles or appendages at the base of the beak and on the forehead, the nakedness of the neck, and the oval form of the nostrils placed on the edge of the cere. The third quill-feather is the longest.

The elevation chosen by the Condor as its breeding place and habitual residence varies from ten thousand to fifteen thousand feet above the level of the sea; here, on some isolated pinnacle or jutting ledge, it rears its brood, and looks down upon the plains below for food. It is generally seen singly or in pairs, seldom in large companies. Its flight, high in the air above the loftiest peaks, is peculiarly beautiful; it sweeps round in the most graceful circles, ascending or descending, without flapping its outspread ample wings. Thus hour after hour it may be watched wheeling and gliding over mountain and river.

The Condor feeds like other vultures on carrion, as dead llamas, mules, horses, sheep, &c., and also on living animals. According to Mr. Darwin, these birds 'frequently attack young goats and lambs; hence the shepherd's dogs are trained, the moment the enemy passes over, to run out, and looking upwards to bark very violently.' Two of them, it is said, will sometimes attack the vicugna, the llama, or the heifer, and even the puma, persecuting the animal till it falls beneath the wounds inflicted by the beaks of its powerful assailants.

When gorged with food, these birds sit in drowsy inactivity on the rocks, and, as Humboldt states, suffer themselves to be driven before the hunters rather than take wing. It is at this time that the Indians capture them with the lasso; they are also taken in traps, and by other devices. According to Mr. Darwin, the Chilenos are in the habit of marking the trees in which the birds roost, frequently to the number of five or six together, and at night they climb up and noose them. They are such heavy sleepers, he adds, as I myself witnessed, that this is not a difficult task.

The Condor makes no nest, but in the months of November and December lays two large white eggs on the bare rock. The young are covered with whitish down, and are said to be unable to fly for an entire year.

At the age of two years the Condor is not yet black, but of a yellowish brown, and up to this time the female has no appearance of a ruff. Hence, ignorant of the change in the plumage of this bird, many travellers talk of two species of Condor.

The adult Condor is very powerful, and extremely tenacious of life; it has been known to live for some time after receiving three pistol balls in its body. The feathers of this bird are wonderfully close and firm, and so overlap each other as to throw off a bullet unless it hits point blank. The general colour of the adult male is glossy black with a tinge of gray; the greater wing-

coverts, except at the base and tips, and the quill-feathers, are white; a white ruff of down at the base of the neck. The skin of the head and neck is very wrinkled, and of a dull reddish colour with a tinge of purple; a large firm comb surmounts the forehead; and the loose skin under the bill can be dilated at pleasure. Tail broad and somewhat graduated. Length about 4 feet; expanse of wings about 9 feet. The female wants the comb, and the greater wing-coverts are blackish gray.

Condor (*Sarcoramphus Gryphus*). Male.

The Condor is never known voluntarily to attack man; and the stories of its carrying away children and destroying boys of ten or twelve years of age must be placed in the now exploded list of exaggerations which teem in the pages of the older writers.

CONDORCET, MARIE-JEAN-ANTOINE-NICOLAS CARITAT, MARQUIS DE, was born in Picardy in 1743. His uncle, the Bishop of Lisieux, who died in 1783, superintended his education, and was the means of procuring for him the most powerful patronage as soon as he was old enough to be introduced into public life. He first distinguished himself as a mathematician, and his success in this department soon opened to him the door of the Academy of Sciences. He took a part in the early stages of the Revolution, but, being proscribed as a Girondin by the Convention, he was forced to fly and conceal himself. After undergoing a great deal of suffering, he was discovered, arrested, and thrown into a dungeon at Bourg-la-Reine, where he swallowed poison, which he had concealed about him, and died March 28, 1794.

His mathematical works are numerous, consisting in great part of memoirs in the 'Transactions' of the Academy. In pure mathematics he devoted himself mostly to the development of the differential and integral calculus. Condorcet is not in the very first rank of mathematicians, but very high in the second. As a literary author, his 'Eloges des Académiciens Morts depuis 1699' procured for him the perpetual secretaryship of the Academy of Sciences, and furthered his election to the French Academy. His 'Lives of Voltaire and Turgot' are distinguished by the enlightened philanthropy, the philosophical zeal, and that desire for improvement, which was always the strongest feeling in the author's heart. But the grand work of Condorcet was his 'Esquisse du Progrès de l'Esprit Humain,' which he wrote while he was seeking refuge from proscription: it is a work more remarkable for depth of thought than brilliancy of style. Another of his productions was his 'Plan for a Constitution,' which he presented to the Convention, at whose request he had undertaken to draw up a report on public instruction.

Condorcet's works have been collected and published in 21 volumes 8vo.

CONDOTTIE'RI, a word in the Italian language signifying captains, chiefs, or leaders, but most usually employed to designate soldiers of fortune, who raised corps of cavalry and infantry at their own expense, and engaged with princes and governments for their services as mercenaries. The practice of employing these mercenaries, which commenced in the early part of the 13th century, originated in the Italian princes and republics commuting the personal services of their subjects in war for pecuniary payments, with which they were enabled to hire mercenaries. As early as 1225, Genoa took the Count of Savoy into pay with 200 horse. Florence retained 500 French lancers in 1282. After the expedition of the Emperor Henry VII. in 1310, many soldiers of fortune remained in the service of Milan, Florence, and other states. In 1353, a band under the command of Fra Moriale, afterwards of Conrad Lando, called the Great Company, appeared in Italy, and extorted money from many of the Italian states. They continued to increase during the wars, both in Italy and France, and in the latter country at one time are stated to have amounted to 40,000 men. Though in some instances the Condottieri were distinguished for their courage and military skill, yet they were even more notorious for bad faith in their engagements with the states they served. Their rapacity was equal to their bad faith; besides their pay, they exacted gratifications for every success. With the improvement of artillery and the introduction of musketry the condottieri declined. Our countryman, Sir John Hawkwood, is said to have been the last, as he was beyond comparison the most eminent for his skill in military affairs. Sir John died at Florence in 1393 at an advanced age, and was buried with great pomp by the Florentines. There is a cenotaph to his memory in the church of Sible Hedingham, Essex, where he was born. (Froissart; Villani; Machiavelli; Aretin.)

CONDRIEU. [RHONE.]

CONDUCTORS OF HEAT. Perhaps all materials are in some degree conductors of heat; that is, when some of their particles are brought near a body already heated, those particles attract the caloric in the body, and afterwards give out a

portion of that element to the particles beyond them.

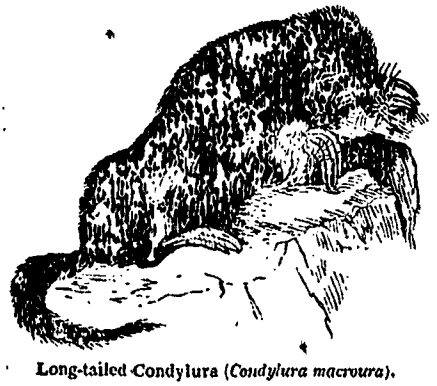
The conducting powers of different solid bodies are noticed in the article ABSTRACTION AND ABSORPTION OF HEAT. With respect to liquids, the experiments which have been made to determine whether or not they are conductors of heat consist in introducing into a cylindrical vessel, half filled with the fluid whose conducting power was to be examined, a quantity of heated fluid of less specific gravity, all due precautions being used to prevent the particles of the two fluids from intermixing; and it was constantly found that a gradual descent of caloric took place from the upper to the lower surface. By such experiments, Professor Thomson, Dr. Dalton, and others, have found that, with equal volumes of the fluids, the conducting power of linseed oil is rather greater than that of water, and the conducting power of mercury about twice as great.

The conducting power of gases, if such power exist, must be extremely small. Little confidence can however be placed in the results of the experiments made to ascertain the fact, from the impossibility of discovering how much of the effect produced may be due to radiation, or to the currents in the gases under examination.

CONDYLU'RA, Illiger's name for a genus of insectivorous Mammalia, founded on the *Sorex cristatus*, or Crested Shrew of Linnæus. The Condylures, or Star-Nosed Moles, are confined to North America. They closely resemble the common Mole of Europe, in their feet, general aspect, and habits; but the tail is longer, and the disc at the end of the snout is encircled by little moveable cartilaginous processes, like the rays of a star; the eyes are extremely minute; external ears are wanting; fur deep, thick, and fine. Dental formula:—

$$\text{Incisors. } \frac{2}{4}; \text{ Canines, } \frac{1-1}{1-1}; \text{ Molars, } \frac{8-8}{7-7} = 40.$$

We have no minute details respecting the manners and instincts of the Condylures, of which three species (perhaps more) are distinguished. They are burrowing animals, feeding upon worms and the larvæ of insects, &c. The Long-tailed Condylure (*C. macroura*) was discovered by Mr. David Douglas on the banks of the Columbia River. The colour of the fur above is deep lustrous brown, paler on the under parts. The tail is contracted at its root, whence it gradually enlarges and tapers to a fine point. Length of head and body, 4¼ inches; of tail, 2½ inches.



Long-tailed Condylura (*Condylura macroura*).

M. Latreille has applied the term *Condylura* to a genus of BRANCHIOPODA.

(Dr. Richardson's *Fauna Boreali-Americana*.)

CONE (Mathematics). In the most general sense, a cone is a surface formed by the motion of a straight line indefinitely extended in both directions, and which always passes through one given point (called the vertex). Any curve in space may be a guiding line (or directrix) through which the moving straight line may be made to pass.

But in common language the term cone is only applied to those general cones in which the directrix is a circle. Of these there are two kinds: the *oblique* cone, when the vertex is not in the axis of the directing circle (the axis being the perpendicular drawn to the plane of the circle through its centre), and the *right* cone, in which the vertex is in the axis.

The surface of a cone is one-half the circumference of its base multiplied by the distance from the vertex to the circumference of the base (called the *slant side*).

The solidity of a cone is one-third of the product of the area of the base and the perpendicular distance of the vertex from the axis.

CONFARREATION. [MARRIAGE, ROMAN.]

CONFECTIONS, called also *Conserves*, or *Condita*, are formed of fresh, generally succulent, vegetable substances, in a few instances with prepared chalk, as in the aromatic confection, preserved by means of sugar or honey. These were formerly much more numerous, and were examples of the polypharmacy prevalent among our ancestors: the number might be still beneficially reduced. The quantity of sugar required to prevent them from spoiling is so great as to disagree with delicate stomachs.

When astringent substances, such as roses, are to be pounded, this process must be conducted in marble, not iron, mortars. The conserves should be put into several small pots, rather than one large pot, which should be glazed with salt, as in Bristol ware, not lead. They should then be well closed, and kept in a dry, cool place. Patent jars, of a very useful kind, are now manufactured for this purpose.

CONFEDERATION OF THE RHINE. The Confederation of the Rhine was established by an Act, signed at Paris on the 12th of July, 1806, by the Kings of Bavaria and Würtemberg, the Elector of Mainz, the Elector of Baden, the Duke of Cleves and Berg (Murat), the Landgrave of Hesse-Darmstadt, the Princes of Nassau-Usingen, Nassau-Weilburg, Hohenzollern-Hechingen, Hohenzollern-Siegmaringen, Salm-Salm, Salm-Kyrburg; the Duke of Aremberg; the Princes of Isenburg, Birstein, Lichtenstein, and the Count of Leyen. By this Act the Elector of Mainz received the title of the Prince Primate; the Elector of Baden, the Landgrave of Hesse-Darmstadt, and the Duke of Berg, received the titles of grand dukes, with royal rights and privileges; the Prince of Nassau-Usingen received the ducal, and

the Count of Leyen the princely dignity. Bonaparte, the French Emperor, declared himself Protector of the Confederation. By the establishment of this Confederation many towns and principalities lost their political existence; and several petty princes were by the same Act deprived of their sovereign powers. The object of the Confederation was declared to be, the maintenance of external and internal peace by the mutual assistance of all the members of the Confederation as well as of France, in case any one of them should be attacked by an enemy. The affairs of the Confederation were to be conducted by a congress sitting at Frankfort-on-the-Main, and divided into two colleges—the royal one, in which the grand dukes had also their seats, and the princely one. In December 1806, the Elector of Saxony, who had received the title of king, joined the Confederation, and his example was followed by all the Saxon princes. In 1808 the Confederation, after the accession of other princes, comprehended 5916 geographical square (German) miles, with a population of 14,608,877 souls; the army of the Confederation, which was fixed in the beginning at 63,000, was increased to the number of 119,180. The Act of the Confederation was violated by its protector himself, who united with France, by a decree of the 10th December, 1810, all the country situated between the mouths of the Schelde and the Elbe, and deprived many sovereign princes of their dominions. Napoleon did not observe any better the promise which he gave at the establishment of the Confederation not to meddle with its internal affairs. The events of 1813 put an end to the Confederation of the Rhine; and the Congress of Vienna established, in 1815, the Germanic Confederation, composed of all the States of Germany.

CONFERENCE, at Hampton Court, was held on the 14th, 16th, and 18th of January, 1604, in the presence of King James I., who took a leading part in the discussion, between 19 bishops and inferior clergymen of the Church of England, and four Presbyterian or Puritan divines, to argue certain objections to the doctrine and discipline of the Church, respecting which the Puritans had petitioned his Majesty. It was followed by no result.

CONFERVÆ, a name sometimes considered synonymous with Algæ. [ALGÆ.] It is limited in systematic botany to a section of Algæ, consisting of simple tubular-jointed species inhabiting fresh water. [WATER-PLANTS.]

CONFESSION means a solemn acknowledgment of some principle or fact. Hence the early Christians, who suffered imprisonment and other penalties from the Roman magistrates for having publicly declared their belief in the gospel, were called confessors. Others, in later times, acquired the same title from having embraced a life of austerity, or retired to some solitude or convent to do penance for their sins. Confession thus became synonymous with penitence, in which sense both words are understood by the Roman Catholics. The practice of confessing one's sins either in public, before the congregation of the faithful, or privately to a priest, dates undoubtedly from the earliest ages of the church. In those times the Christians, scattered about the Roman world, and exposed to persecution, formed many small communities, living under the discipline of their presbyters, who knew every individual of their respective flocks, the members of which watched carefully over each other's conduct. Any gross irregularity or any compliance with heathen rites by one of the flock was sure to be known to the rest, and the offender was thereby subject to interdiction from Christian worship and communion. If he wished to be readmitted to the communion of the church, he must publicly acknowledge and repent of his guilt, and submit to the penance imposed by the presbyter. This appears to have been the original mode of confession. It does not seem to be clearly determined when the practice of private or 'auricular confession' was substituted for public confession.

When, and under what circumstances, confession, either public or private, was deemed absolutely necessary for the remission of sins, is another subject of controversy. Innocent III., in the fourth Lateran council, A.D. 1215 (Canon 21), made confession (meaning auricular or private) obligatory upon every adult person once a year; and that continues to be one of the rules of the Roman Catholic church to the present day, which numbers penitence among the sacraments. The Council of Trent, in its Catechism, defines it to be 'a declaration by the penitent of his sins, made to a priest in order to receive the penance and absolution.' Penitence, therefore, consists of four parts—confession, contrition, absolution, and penance; and it is a positive doctrine of the same church, that without the concurrence of all these parts or conditions the sacrament is null and void. The penance which the priest imposes consists generally of satisfaction to be given if the penitent has injured any one in his property, honour, &c., in a manner that can admit of reparation, and also of prayers, abstinence, or other religious practices to be performed. The secrecy imposed on confessors is strict and unconditional; whatever be the crime of which a penitent may accuse himself, they are solemnly bound to keep it secret, under the most severe denunciations and penalties, both here and hereafter, that of excommunication included.

The box in which the priest sits in the church to hear the penitent is called a confessional. But the act of confession may be performed out of church, in private houses, in the field; in any place in short, provided it be not within hearing of any person except the priest and the penitent.

The Greek church retains the practice of auricular confession, but differs from that of Rome in the form of the absolution. The Protestant and Reformed churches, including those of England and Scotland, do not admit the practice, but recommend every one to confess his sins to God, and to repent in order to obtain forgiveness.

CONFESSION OF AUGSBURG. [AUGSBURG, CONFESSION OF.]

CONFIRMATION is, according to the Church of England, 'the rite of laying on of hands upon those who have been baptized, and are come to

years of discretion.' Such only are qualified to be confirmed as can say the Creed, the Lord's Prayer, the Ten Commandments, and the Church Catechism; to the end that children, having learned what their godfathers and godmothers promised for them in baptism, may themselves ratify and confirm the same, acknowledging themselves 'bound to believe and to do' all which those persons undertook for them. It is affirmed, in the sixtieth canon of the Anglican Church, that confirmation is 'a solemn, ancient, and laudable custom in the church of God, continued from the apostolic times.' On the other hand, among the Protestant Dissenters it is regarded as the remnant of a Popish ceremony.

The Puritan contempt for the hierarchy occasioned confirmation to become greatly neglected after the Protestant Reformation in England (Hooker, i. 5, 66; Bishop Hall's Χειροθεσία); but subsequent to that period the Church of England has observed the rite with much more strictness than the Lutheran or any other church.

CONFIRMATION, in Law. [DEED.]

CONFOLENS. [CHARENTE.]

CONFUCIUS. The real name of Confucius was *Koong-foo-tse*. According to some authorities, he lived five centuries and a half, and, according to others, only four centuries and a half, before the Christian æra. The place of his birth is now generally stated to have been the state of Loo, a little to the eastward of the great canal in Shantung province, where he was educated, and where he married. His object in acquiring knowledge was to turn it practically to the purposes of good government, and he accordingly devoted himself exclusively to moral and political science. He afterwards divorced his wife, in order, as the Jesuits say, that he might better attend to his studies. When he thought himself sufficiently qualified to instruct the barbarous age in which he lived, he quitted his solitude for the courts of princes. China was not then united under one emperor: this union did not take place until two or three centuries after the philosopher's death. But, when Confucius began his mission, there seem to have been as many independent kings in China as there were in England under the Saxon heptarchy. He journeyed through these various states in a condition of simplicity and poverty, devoting himself to the instruction of all ranks in his precepts of virtue and social order. His proselytes gradually increased, and he at length reckoned as many as 3000 disciples of whom 72 were more particularly distinguished by their devotion to their master, and ten were so well grounded in all sorts of knowledge that they were called, by way of excellence, 'the ten wise men.' In his visits to the different princes he endeavoured to prevail upon them to establish a wise and peaceful administration. After many wanderings and disappointments, he became prime minister, with a recognised authority to carry his theories into practice in his native country Loo. At this time he was 55 years old. In three years he is said to have effected a thorough change in the moral condition of the kingdom. The happiness and prosperity created by the philosophic prime minister excited the jealousy of the neighbouring kings. The sovereign of Loo was soon induced to abandon his benefactor, and Confucius was obliged to flee to the northern parts of China. He was subsequently repulsed at three different courts, to which he applied for office in order that he might render the people happy; and, after sustaining many other sorrows, he withdrew to the kingdom of Chin, where he lived in great poverty. His doctrines, however had taken root, and it was at this time of adversity that his disciples were most numerous. He went again to Loo, his native country, but vainly solicited to be re-employed in the government. At length, full of years, if not of honours, he retired from the world in company with a few of his chosen disciples, to write or complete those works which became the sacred books of the Chinese, and which have survived twenty-two centuries. He died in his seventy-third year.

'It was the great object of Confucius,' says a recent writer, 'to regulate the manners of the people. He thought outward decorum the true emblem of excellence of heart; he therefore digested all the various ceremonies into one general code of rites, which was called Le-ke, or Ly-king, &c. In this work every ritual in all the relations of human life is strictly regulated, so that a true Chinese is a perfect automaton, put in motion by the regulations of the Ly-king. Some of the rites are most excellent: the duties towards parents, the respect due to superiors, the decorum in the behaviour of common life, &c. speak highly in favour of Confucius; but his substituting ceremony for simplicity and true politeness is unpardonable. The Ly-king contains many excellent maxims, and inculcates morality; but it has come to us in a mutilated state, with many interpolations.' (Gutzlaff, 'Sketch of Chinese History, Ancient and Modern.')

In the writings of Confucius the duties of husbands towards their wives were slightly dwelt upon. On the other hand, the duties and implicit submission of children to their parents were extended to the utmost, and most rigidly inculcated. Upon this wide principle of filial obedience the whole of his system, moral and political, is founded.

Confucius was a teacher of morals, but not the founder of a religion. His doctrines constitute rather a system of philosophy in the department of morals and politics than any particular religious faith. (Davis.)

The moral doctrines of Confucius include that capital one, which, however neglected in practice, has obtained the universal assent of mankind: he taught his disciples 'to treat others according to the treatment which they themselves would desire at their hands.' In his doctrines there is an evident leaning to predestination or fatalism, and to predicting events by the mystical lines of Fo-shee. The system of Confucius, without making out any pretension to a divine legation, still continues to prevail throughout the most extensive empire in world. The body of his laws and instructions is still followed, not only by the Chinese, but by Coreans, Cochin-Chinese, and other people who, taken collectively, are estimated at 400,000,000.

(Sir J. F. Davis—*The Chinese; a General Description of China and its Inhabitants*, London, 1836; Gutzlaff—*Sketch of Chinese History, Ancient and Modern; Travels of the Jesuit Missionaries*, Bell (of Antermony), Barrow, Staunton, &c.)

CONGE' D'ESLIRE, a term in Norman French, literally signifying 'leave to elect,' which is appropriated to the king's writ or licence to a dean and chapter to elect a bishop, at the time of the vacancy of the see.

At first the nomination to bishoprics, it is said, was generally made by the temporal princes of Europe; but between A.D. 1122 and A.D. 1145 it became a rule almost every where established, that bishops should be chosen by the chapter. In England, by the constitutions of Clarendon, A.D. 1164, the election was vested in the chapters, subject to the king's approbation. The right of election was afterwards surrendered to the chapters by a charter of King John, by which however he reserved to himself, among other things, the right of granting a congé d'eslire, and of confirming the choice of the chapter. This grant of freedom of election was expressly recognised in Magna Charta, and also by a subsequent statute, 25 Ed. III., stat. 6 (one of the statutes of præmunire), which was passed for the purpose of preventing the popes from interfering with the elections to dignities and benefices in England.

This was the law until the passing of 25 Henry VIII. c. 20, which was repealed in Edward the Sixth's reign. It is stated (Blackstone, 'Comm.' i. 380, Note by Coleridge) 'that the statute (of Hen. VIII.) is held to have been constructively revived and to be still in force, though it does not apply to the five bishoprics created by Henry VIII. subsequently to its passing; these are Bristol, Gloucester, Chester, Peterborough, and Oxford, which have always been pure donatives in form as well as substance.' The authorities for this opinion are not given by Coleridge. This act of Henry VIII. provides that, upon every avoidance of an archbishopric or bishopric, the king may send to the dean and chapter a licence under the great seal to proceed to the election of a successor, and with the licence a letter missive containing the name of the person whom they are to elect. If the dean and chapter delay their election above twelve days after receiving the licence, the king may, by letters patent, nominate any person to the vacant see; if they delay the election beyond twenty days, or elect any other person than the candidate recommended by the king, or do any thing else in contravention of the act, they incur the penalty of a præmunire. Election is followed by confirmation, investiture, and consecration; after which the bishop sues to the king for his temporalities. Bishoprics in Ireland are donative by letters patent, without a congé d'eslire. ('Irish Stat.' 2 Eliz. c. 4.)

CONGER EEL. [MURÆNIDÆ.]

CONGESTION, a preternatural accumulation of blood in the capillary vessels of the sanguiferous system, attended with disordered function of the organs in which such an accumulation takes place. The main functions of the sanguiferous system are performed by the ultimate divisions of the blood-vessels, called, from their hair-like minuteness, *capillaries*, the office of the main trunks and the larger branches of the blood-vessels being merely to convey to the capillaries the material acted upon by them. In certain conditions of the system these capillaries become weakened and debilitated, and the consequence is, that they are unable to get rid of the blood as fast as it is sent to them. From this cause they become distended with blood, and congestion takes place.

Congestion, when present to any considerable extent, and when continuing for any length of time, disorders the function of the organ in which it takes place, and there is scarcely an organ of the body which may not have its functions deranged by this occurrence.

Any thing may be the cause of congestion which diminishes the vital energy of the capillary vessels, or which changes, beyond a certain limit, the quantity and quality of the blood they contain. If the vital energy of the capillaries be diminished, they cannot maintain the tension necessary to prevent distension of their parietes, and a consequent preternatural accumulation of blood. If the quantity and quality of the blood they contain be altered, their natural stimulus may be so deficient as not to excite them, or so excessive as to exhaust them.

There is no morbid state of the system over which human art has so little control as that of congestion, when the affection is extensive and severe. When, however, it is seated only in a single organ, and is not very intense, there are remedies which have a powerful tendency to relieve it; but there is scarcely any disease of the body the treatment of which requires to be conducted with so much caution and discrimination. The adoption of a wrong course, or the too vigorous application of a well-chosen remedy, has, in this case, a more than ordinary tendency to turn the balance between life and death, on the side of death.

CONGLETON. [CHESHIRE.]

CONGLETON, HENRY BROOKE PARNELL, LORD, was born July 3, 1776, and was the second son of Sir John Parnell, Chancellor of the Irish Exchequer. He was educated at Eton and Cambridge, and after leaving the university he spent some time abroad. In 1801 he married a grand-daughter of the Earl of Bute, and in 1802 he was returned to parliament for the borough of Portarlington, for which he only sat a few weeks, and then remained out of parliament till March 1806, when he was returned as one of the members for Queen's County, which he continued to represent until the general election in 1832, when he declined a contest with the Repeal of the Union party, and Mr. Lalor was elected in his place. In April 1333, he was returned for Dundee, and he was elected again for the same place in 1835 and 1837. In August 1841, he was removed to the Upper House, by being created Baron Congleton, of Congleton, in the county of Chester. During a period of temporary insanity, he put a period to his own existence, June 8, 1842.

Sir Henry Parnell's political course was throughout that of an adherent to the most liberal section

of the Whig, as distinguished from the Radical party. Upon the accession of the Whig ministry in 1806, he was made a lord of the Treasury in Ireland. He made the motion on the Civil List which dissolved the ministry of the Duke of Wellington in the end of 1830; and on the accession of his friends to power, which followed, he was made secretary at war. In 1832 he resigned; but, on the formation of Lord Melbourne's administration in 1835, he was made paymaster of the forces and treasurer of the ordnance and the navy, which offices he retained till the breaking up of the ministry in August 1841. He had also served as chairman of the finance committee appointed by the House of Commons in 1828. In 1833 he was made a member of the government commission appointed to inquire into the excise.

Besides corrected reports of five speeches which he delivered in the House of Commons—on the Irish Currency, in 1809; on Irish Tithes, in 1810; on the Bullion Report, in 1811; on the State of Ireland, in 1824; and on Unlawful Societies in Ireland, in 1825—Sir Henry Parnell published a number of treatises and pamphlets, of which the principal were 'On Financial Reform,' 1830; and 'A Treatise on Roads,' 1833.

CONGLOMERATES. This term is most usually applied by geologists to designate rocks more or less distinctly inclosing displaced fragments of mineral masses which had been consolidated at some previous epoch, and subsequently broken up, removed from their original site, and placed in circumstances such as to permit of their being *reaggregated*, and more or less cemented together by intervening smaller particles. Thus the old red conglomerate on the borders of the Grampians is full of *fragments* of the still more ancient schistose and gneissic strata, worn by attrition in water, and reunited into a solid rock by interposed red sands.

In some volcanic regions the materials thrown out by eruptions are reaggregated into conglomerate, by the operations of water.

CONGO. This name, in its most extensive application, comprehends the whole of the region lying along the western coast of Africa, and comprised in the four kingdoms or districts of Loango, Congo Proper, Angola, and Benguela. In this large and loose sense it extends from Cape Lopez Gonsalvo, in 0° 44′ S. lat. to Cape Negro, in 15° 40′ S. lat. Congo, properly so called, does not however stretch to the north beyond the river Zaire (otherwise called the Congo), in about 6° S. lat., which separates it from Loango, nor to the south beyond the river Dando, in 8° 20′ S. lat., which separates it from Angola. It is believed to extend a considerable distance into the interior. Three of these districts are described under ANGOLA; BENGUELA; LOANGO. The history of the early European settlement is noticed under ANGOLA; and the chief river is described under ZAIRE. The visits made to these regions by Europeans have been chiefly those of Diogo Cam, 1484 and 1489; Ruy de Souza, 1490; Andrew Battel, 1607; Gattina and Piacenzo, 1666; Sorrento, 1682; Dapper, 1686; Barbot, 1688; several Portuguese missionaries during the 18th century; and Captain Tuckey, who was sent by the English government on an exploratory expedition in 1816. The native division of Congo is said to be into six provinces—Bamba, Sogno, Sondi, Pango, Batta, and Penda; but the early Portuguese settlers adopted a new division. They formed a town, San Salvador, in the interior; but, since the decline of the Portuguese power, little is known of the towns or the interior generally. When Captain Tuckey visited Congo, he found that the range of the thermometer, from about the middle of July to the middle of August, was never below 60° during the night, nor above 80° during the day; the common noon-day heat was 76°. Among the vegetable products (for many of which the natives must have been indebted to the Portuguese) are manioc or cassava, yams, maize, sweet potatoes, pumpkins, millet, calavanses, cabbages, spinach, pepper, capsicum, the sugar cane, and tobacco. Of fruits they have the banana, the papaw, the orange, the lime, and the pine-apple, which last Captain Tuckey found growing in the open places at the extreme point to which he penetrated. Their only prepared beverage is a wine made from the juice of the palm-tree, an agreeable and wholesome drink. Of domestic animals there are cattle, goats, hogs, fowls, ducks, and pigeons, as well as a few hairy sheep. Of wild animals, the country abounds with elephants, leopards, lions, buffaloes, large monkeys, antelopes, wild hogs, &c. Guinea fowl and red-legged partridges are described as abundant, large, and fine; and wild pigeons, of three or four species, as very plentiful. Bees are in great number. Hippopotami, crocodiles, and an abundance of fish are found in the river Zaire, or Congo.

Congo appears to have a monarchical government, and also a species of aristocracy; for there are hereditary fiefs, called Chenoos, the succession to which is determined by exact rules. Notwithstanding this apparent civilisation however, the Congoese must be considered as sunk in the same barbarism with the other nations of the west coast of Africa. Their houses are mere huts constructed of a few posts stuck in the ground and interwoven with reeds, and the natives themselves go naked, with the exception of a small apron, generally of grass-matting, tied round their loins. They seem to be a timid and unwarlike race, and both their indolence and their sensuality are extreme. Their women are their drudges in all kinds of laborious work, and, not excepting the sisters, daughters, and wives of the highest personages, are eagerly offered by them for a trifle to a white man of any grade. They scarcely appear to have gained a step towards civilisation by their intercourse with the Portuguese. Even the Christianity introduced among them by their European conquerors has, as in such circumstances might be expected, retained very little resemblance to what is commonly understood by that name. The language of the natives in all these four kingdoms or districts has been found by Marsden and Tuckey almost identical with that spoken by the natives of the opposite coast of Africa, 30 degrees of longitude farther east.

CONGREGATION most commonly signifies

an assembly of persons for the purpose of public worship and religious edification. It denotes more particularly a number of ecclesiastics constituting a legislative and executive body; and in this acceptation it is applied chiefly to certain boards of administration consisting of cardinals and prelates, or aspirants to the cardinalship in Rome. Congregation is also used to designate a company, society, or fraternity of monks forming a subdivision of an order. 'The Congregation of the Lord' was an appellation assumed by the Scotch Presbyterian Reformers, who called the Church of England the Congregation of Satan. They appeared first in 1557, under the Earl of Argyle, and were subsequently led by John Knox.

Congregationalists are those who compose the congregations which assume an independence, not only of the ecclesiastical control of the established hierarchy, but of all authority extraneous to the constituency of the congregation itself. They are generally considered to be of the same origin as the Brownists, who appeared in 1600. [BROWNISTS.]

CONGRESS, an assembly of envoys delegated by different courts with powers to concert measures for their common good or to adjust their mutual concerns. The term is given also to a meeting of sovereign princes which is held for the like purpose. The delegates from the Assemblies of the British colonies who met at New York, 7th October, 1765, to consider their grievances, called their assemblage a Congress. A second congress, which assembled in June 1774, and sat for eight weeks, published a Declaration of Rights. Another congress met in May 1775, which organised the military and financial resources of the *colonies*; and thus these *assemblies* of delegates exercised the functions of a supreme government, and under their authority the war of independence was brought to a successful termination. In 1789 the constitution was reorganised, and a congress of two houses was formed. [UNITED STATES OF NORTH AMERICA.] The meeting of envoys or plenipotentiaries which precedes a treaty of peace is sometimes called a Congress; but the term is more generally applied to such meetings when they have to settle, either before or after the peace, an extensive plan of political arrangements and reorganisation. Such was the nature of the Congress of Vienna in 1815. At the Congress of Verona, which sat from October to December in 1822, it was determined that French troops should march into Spain to restore to Ferdinand VII. his freedom of action, or, in other words, to put down constitutional principles. The Duke of Wellington was present at this congress, and through him the protest of the British Government against interfering with the internal politics of Spain was conveyed to the Congress.

CONGRESS. [UNITED STATES OF NORTH AMERICA.]

CONGREVE, WILLIAM, the second son of Richard Congreve, of Congreve, in Staffordshire, was born at Bardsey, near Leeds, in Yorkshire, and educated first at the great school at Kilkenny, and afterwards at the University of Dublin. After the revolution in 1688 he returned to England, and was entered as a student in the Temple. His first play, the 'Old Bachelor,' written at the age of nineteen, was received with great applause at Drury Lane, in 1693. The next year he produced the 'Double-Dealer,' and in 1695, 'Love for Love.' In 1697 he produced his tragedy of the 'Mourning Bride,' and two years afterwards the comedy of the 'Way of the World.' He wrote no more for the stage after this, but, having a sufficient income from certain official situations, lived as a private gentleman, which he was fond of being considered. During the latter part of his life he was afflicted with gout and with blindness, and having been overturned in his chariot, from which he received some internal injury, he died Jan. 9, 1729, at his house in Surrey Street, Strand, London, aged 57. Mr. Congreve was also the author of a romance called 'The Incognita, or Love and Duty reconciled,' written at the age of seventeen; 'The Judgment of Paris,' a masque; 'Semele,' an opera; and several poems.

CONI, properly CUNEO, a division of the continental states of Sardinia, is bounded N. by the state of Turin, E. by that of Alessandria, S.E., S. and W. by the Apennines and the Maritime Alps, which separate it from Genova, Nizza (Nice), and France. Its greatest length from E. to W. is 69 miles, from N. to S. 58 miles. The area is 2710 square miles, and the population amounts to 596,181. The surface presents mountain ridges springing from the Alps and Apennines, all converging to the basin of the Po, and inclosing valleys of great fertility, which yield corn, maize, wine, silk, pulse, hemp, and fruits. The white mulberry-tree is cultivated with great care and success for the rearing of silk-worms, which gives profitable employment to great numbers of the peasantry. The lower slopes of the mountains are covered with forests of chestnut; and their higher parts afford abundant summer pastures, on which great numbers of cattle are fed. Iron, lead, marble, slates, mineral salt, &c. are found.

The number of rivers is very great. They are all tributaries of the Po, which, rising from the eastern side of Monte Viso, flows E. to within a short distance of the town of Saluzzo; it then turns N.E., and enters the state of Torino or Turin. The Vraita flows E. from the Maritime Alps as far as Castiglione, whence it turns N., and enters the Po on the right bank, a little above Carmagnola. The Maira rises also in the Maritime Alps, and flows in a direction parallel to that of the Vraita, and enters the Po about 2 miles nearer Carmagnola. The next river to the S. is the Stura, which flows parallel to the preceding as far as Fossano, where it turns N.N.E., and enters the Tanaro on the left bank near Cherasco; its principal affluent is the Vermegnana or Gesso, which enters it on the right bank below Cuneo. The Tanaro, rising in the Maritime Alps a little E. of the Col-di-Tende, flows nearly due north at a little distance W. of an offshoot from the main chain as far as Cherasco, where it passes through a gap to the eastern side of the ridge, passing the towns of Alba and Asti; from the latter it runs E. to a little below Alessandria, near which it receives from the Apennines the Belbo and the Bormida increased

by the Orba from the right bank, and then turning N.E. enters the Po about 7 miles N. of Marengo. From Asti the Tanaro is navigable for barges, but with some difficulty, owing to the rapidity of the stream at some points.

The division of Cuneo consists of 4 provinces, which, with the area, *mandamenti*, and population of each, are as follows:—

Provinces.	Area in sq. miles.	Mandamenti.	Pop. in 1838.
Cuneo.	1003	18	168,796
Alba	408	12	111,007
Mondovi	679	18	138,266
Saluzzo	620	14	148,112
Total	2710	62	596,181

The province of Cuneo contains 67 *comuni*, and occupies the south-western portion of the state. The chief town is Cuneo, which stands on the right bank of the Stura, 47 miles S. of Turin, and has, including the garrison, 19,397 inhabitants. It is the seat of a bishop, is well built, and has 8 churches, a royal college, and public baths. It is a busy place, and has cloth and silk factories, and a considerable trade in the produce of the country by means of the canal joining the Stura and the Po, which runs from this town to Carmagnola. Busca, on the left bank of the Maira, stands at the foot of a hill, in a rich wine district, and has 8990 inhabitants. Boves, S. of Cuneo, at the foot of mountains in which iron mines and marble quarries are worked, has 8709 inhabitants. Caraglio has a college, and a population of 6268. Chiusa, on the left of the Pesio, a feeder of the Tanaro, has 5751 inhabitants. Demonte, a fortress on the left bank of the Stura, has 6956. Dronero, on the Maira, which is here crossed by a handsome bridge, has a college, and a population of 7716. Fossano, on the left bank of the Stura, 15 miles N.N.E. of Cuneo, is a well-built town, with a royal college, a handsome cathedral, silk factories, paper-mills, and tanneries. It is the seat of a bishop, and has 16,041 inhabitants, who trade in corn, hemp, and cattle. Limone, at the foot of the Col-di-Tende, and near the source of the Vermegnana, has 3500 inhabitants, who are chiefly employed as guides, and in keeping in repair the terraced roads over the neighbouring mountains. Peveragno; population, 6080. San Damiano; population, 6767. In this province males are more numerous than females.

The province of ALBA, before described, occupies the north-eastern part of the division, and contains 77 *comuni*. Here also the men are more numerous than the women, in the ratio of 100 to 93.

The province of Mondovi lies E. of that of Cuneo, S. of Alba, and contains 71 *comuni*. The chief town, Mondovi, stands on the Ellero, a feeder of the Tanaro, 50 miles from Turin, and has 15,921 inhabitants. It is defended by walls and a strong castle; contains several fine churches; ecclesiastical and royal colleges; and has manufactures of silks, woollens, cotton, paper, and hats. The town gives title to a bishop. Chemasco, a fortress at the confluence of the Stura and Tanaro, has a college, two hospitals, and 8893 inhabitants; it is well built, and contains several fine buildings. The neighbourhood of the town is famous for its white truffles. The chief towns of the other mandamenti have populations under 5000. The ratio of men to women in this province is 100 to 95.

The province of Saluzzo occupies the north-western part of the division, and contains 52 *comuni*. The capital, Saluzzo, 31 miles from Turin, stands on the northern slope of a ridge that projects from Monte Viso, and separates the waters of the Po from those of the Vraita. It is a large episcopal town, and contains an old castle formerly belonging to the Marquises of Saluzzo; a handsome cathedral; several other churches; a royal college; hospital; and 14,426 inhabitants, who trade in the produce of the country, and manufacture silk, leather, hats, linen, and iron. Racconigi, a pretty town near the confluence of the Grana and the Maira, is situated in the most fertile part of Piedmont, and has 10,102 inhabitants. Savigliano, E. of Saluzzo, stands in a fertile plain watered by the Maira and other feeders of the Po, and has 15,546 inhabitants. It is a well-built town, has a fine market-place; several handsome churches, one of which is collegiate; two hospitals; and silk, linen, and cloth factories. This is a favourite place of residence with the provincial nobility and landed proprietors. There are several other towns, but none of them have a population exceeding 5000.

(Serristori, *Saggio Statistico; Nuova Circoscrizione delle Provincie dei Regii Stati in Terraferma*, Turin, 1839; *Regia Commissione de Statistica per gli Stati Sardi.*)

CONIA, an alkali obtained from hemlock (*Conium maculatum*). It is procured from the seeds or fresh leaves of the plant by distillation with water holding some potash in solution. When pure, it has the following properties:—It has the appearance of a colourless volatile oil, and is lighter than water, its specific gravity being 0.89. Its odour is powerful, diffusible, and repulsive, somewhat like that of hemlock itself. It is intensely acrid to the taste. It has a strong alkaline reaction on turmeric paper. It is sparingly soluble in water. Alcohol mixes with it in all proportions; and it also dissolves readily in æther. With about one-fourth of its weight of water it forms a hydrate. By exposure to the air it quickly becomes of a dark colour, and spontaneously decomposes with the evolution of ammonia. Its boiling point is 370° Fahrenheit. It distils however with boiling water, but suffers partial decomposition. Its composition has not been determined with certainty, but it is probably represented by $C^{16}\,H^{16}\,N'$.

CONIC SECTIONS, the curves formed by the intersection of a circular cone and a plane, the former being either oblique or right.

Though the name of conic section still remains, yet the interest which attaches to these curves, and the method of treating them, has no longer any reference to the accident from which they derive their name. The Greek geometers, in pure

speculation, occupied themselves with the different methods in which a cone may be cut, simply because the conical surface (with the cylindrical and spherical) came within the restrictive definitions under which they had placed geometry. The works of Apollonius and Archimedes are the first in which these sections were treated; and their history is nothing but that of the addition of a few remarkable properties, till the discovery that the path of a projected body in an unresisting space is a parabola, and that of a planet round the sun an ellipse. Since that time we might as well attempt to write the history of mathematics and physics as that of conic sections in their results and consequences: and from that time we have nothing to say of them merely as *conic sections*.

Some sections of a cone are considered in elementary geometry, for a plane may meet a cone in a point, or in a single straight line, or in two intersecting straight lines, or in a circle. But the curves which are peculiarly conic sections are the oval made by a plane which cuts the cone entirely on one side of the vertex, called the *Ellipse;* the indefinitely extended modification of this when the plane becomes parallel to any one slant side of the cone, called the *Parabola;* and the curve which is partly on one side, and partly on the other of the vertex, formed by a plane which cuts both surfaces of the cone, called the *Hyperbola*.

CONICAL PROJECTION is a method of describing a representation of a part of a sphere upon a plane. A sphere cannot be unrolled into a plane, as can every cone or portion of a cone. If a cone be described which touches a sphere in a small circle, and if the several points of the sphere be then projected upon the cone by lines drawn through the centre, the parts adjacent to the small circle of contact will be projected into figures very nearly similar to the originals. If the degrees of latitude, which are very nearly equal, be made actually equal, no injurious effect will be produced on the map.

CONI'FERÆ, a natural order of gymnospermous Exogens, consisting of resinous, mostly evergreen, hard-leaved trees or shrubs, inhabiting all those parts of the world in which arborescent plants can exist. Under this name are collected the various races of fir-trees, as the *Abietineæ* [ABIES], the pines [PINUS], the cedars [CUPRESSUS], the junipers [JUNIPERUS], and the like, which, however dissimilar they may at first sight appear, correspond, not only in their universally terebinthaceous sap, but in many points of organisation.

Coniferæ are among the most useful of all plants; firstly, for their resinous secretions, such as pitch, turpentines of different kinds, Canada balsam, and similar substances; secondly, for their timber, which, under the names of deal, fir, pine, red cedar, Sandarach wood, &c., is most extensively used in building; and thirdly, because of the screen which their compact and evergreen leaves oppose against cold, in barren and bleak situations where few other trees will grow.

CONIROSTRES, the third family of Cuvier's *Passeres*, comprising those genera which have a strong bill, more or less conical, and without notches. Cuvier says that they live more or less exclusively upon seeds, in proportion as their bill is more or less thick. The *Conirostres* form one of the five tribes of the order *Insessores* of Mr. Vigors. [BIRDS.]

CONI'UM MACULA'TUM, or *Hemlock*, is a wild umbelliferous plant, possessing highly narcotic and dangerous qualities, but used medicinally as a remedy against nervous affections. It grows in wild places, sometimes by the sides of ditches in meadows, but more frequently in light upland pastures, flowering in June and July.

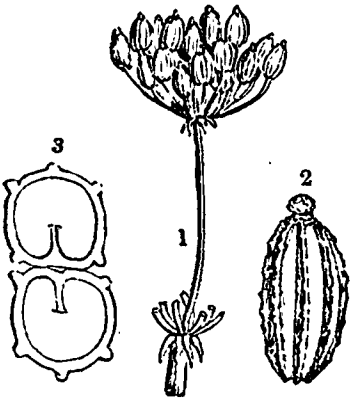
It is necessary to pay the greatest attention to the botanical characters of *Conium maculatum*, in order that the genuine one may be collected. It is best distinguished by means of its fruit. Sometimes plants resembling it are collected, which are almost or entirely inert when employed as a medicine, or plants possessed of greater potency are used in its stead, from which fatal results have followed. It is a 'well-known circumstance that the greatest discrepancy prevails among medical men as to the activity of hemlock, not merely as a remedy, but also as a poison.' This is mainly owing to the numerous contingencies which have an influence on the potency of the principle contained in the plant. The place of growth, kind of season, the method of drying and preserving, as well as the length of time it has been kept, all cause marked differences in the quality of the drug.

The active principle of hemlock appears to be an alkaloid termed *conia*, which, unlike most vegetable alkaloids previously known, is not fixed and crystalline, but volatile and oleaginous. Its activity is increased by union with acids, both mineral and vegetable; a circumstance which shows the impropriety of giving vinegar as an antidote in cases of poisoning by hemlock, when any of the substances is yet present in the stomach. [CONIA.]

Conia appears, from the experiments of Geiger and Christison, to be a deadly poison to all animals. It acts with the most extraordinary rapidity; but, if it fail to kill, its injurious action passes quickly away, and perfect recovery follows. 'It exhausts the nervous energy of the spinal chord, producing general muscular paralysis and asphyxia, from relaxation.' The heart however is exempt from this general paralysis, contracting vigorously for a long time after all motion, and respiration, and other signs of life are extinct. It is therefore extremely probable, as suggested by Dr. Christison, that where a dose is not so large as to produce immediate death the carrying on of artificial respiration and administering vital stimulants might save the life of the patient, especially as the action of the poison is so transient, and incapable of producing a permanently injurious impression.

As a medicinal agent hemlock is very valuable, and is frequently used as an anti-irritant and in poultices.

Dr. Christison is of opinion that the *Conium maculatum* of the present day is not the plant which furnished the poison employed to despatch Phocion and Socrates.

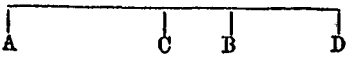


Fruit of Conium Maculatum.

1, A partial umbel loaded with fruit, natural size; 2, The back view of a fruit, much magnified; 3, a transverse section of the same, showing the ridges, the absence of vittæ, and the involute albumen.

CONJEVERAM, a town of Hindustan, in the Carnatic, is situated in 12° 48′ N. lat., 79° 45′ E. long., 46 miles S.W. from Madras. The town is of considerable size, with wide streets crossing each other at right angles, and bordered with cocoa-nut trees. The houses generally have mud walls, and are roofed with tiles. The town contains a very large Hindoo pagoda. (Hamilton's *East India Gazetteer.*)

CONJUGATE. This word is used in several branches of mathematics in a sense which (with one exception, and that might easily be abolished) may be described as follows: two points, lines, &c., are called conjugate, when they are considered together in any property in such a manner that they may be interchanged without altering the way of enunciating the property. Thus, if AC be to CB as AD to DB, C and D are conjugate points with regard to this property.



If we write D where C now is, and C for D, the property is still expressed in exactly the same way. We have other instances in conjugate diameters, conjugate hyperbolas, conjugate foci.

CONJUGATION of a verb is a term in Grammar which denotes the addition of suffixes or prefixes to the crude or elementary form of a verb, for the purpose of denoting respectively person, number, time, state, mood, and what is generally understood by voice. In the English language, prefixes are commonly used for these purposes, and these prefixes are not printed in connection with the verb, though the voice presents them in one mass. Thus *I shall have heard*, as pronounced, is not less one word than the Latin *audi-v-er-o*. In this example therefore, *I*, *shall*, *have*, are virtually prefixes, and the letter *d*, a contraction from *ed*, is a suffix attached to the simple verb or crude form *hear*. In the ancient languages, such as Greek, Latin, and Sanscrit, suffixes are commonly but not exclusively preferred.

CONJUNCTION and OPPOSITION (Astronomy). Two heavenly bodies are said to be in conjunction with respect to a third, when they have either the same longitude (measured on the ecliptic of the third) or the same right ascension (measured on its equator). But, as it is the second position which is usually meant by conjunction, the first is called the ecliptic conjunction. Thus, in every eclipse of the sun, there is a conjunction of the sun and moon, both equatorial and ecliptic, not however at the same moment, unless the eclipse be perfectly central. There is also a conjunction at every new moon.

Opposition (equatorial or ecliptic) is when the bodies are exactly of opposite right ascensions or opposite longitudes, that is, when their longitudes or right ascensions differ by 180°. Thus there is always an opposition of sun and moon at every full moon, and both oppositions are at the same moment in the middle of a central eclipse.

Apparent conjunction and opposition take place when the right ascensions are the same, or opposite to the spectator on the earth's surface: *true* conjunction, &c. refers to the spectator supposed to be at the earth's centre.

CONJUNCTIONS. Under this term grammarians commonly include several classes of words which have little similarity of meaning, and which, in their etymological origin, may be verbs, substantives, adjectives, or prepositions. The old definition of a conjunction, that it was a word which connected sentences together, will certainly not apply in all cases, if at least the word 'and' is to be included. It is true, as Horne Tooke observes, that the sentence 'You and I and Peter rode to London' may be resolved into three: 'you rode,' 'I rode,' 'Peter rode.' But try some other instances: 'two and two are four;' 'AB, BC, and CA form a triangle;' 'John and Jane are a handsome couple.'—Does AB form a triangle?—Is John a couple?—Are two four? (*Diversions of Purley*, Taylor's edition, i. p. 210.)

CONN, LOCH. [Mayo.]

CONNAMARA. [Galway.]

CONNARA'CEÆ are tropical trees or shrubs. Their seeds are remarkable for having the embryo at the end most distant from the hilum. The species are much alike in habit, not numerous, and possess no known properties that deserve to be mentioned.

CONNAUGHT, a province in Ireland, containing the counties of Galway, Mayo, Roscommon, Leitrim, and Sligo. It lies between 52° 52′ and 54° 25′ N. lat., and between 7° 33′ and 10° 15′ W. long. It is bounded N. and W. by the Atlantic Ocean, E by the river Shannon and the counties of Cavan, Fermanagh, and Donegal, and S. by the county of Clare. The greatest length of Connaught, from Scariff on the borders of Clare on the south, to Mullaghmore Head, on those of Donegal, on the north, is 108 miles; and its greatest breadth, from the boundary of Leitrim on the N.E. to Slyne Head on the S.W., 118 miles. The area is 4,392,043 acres. The population in 1841 was 1,418,859. By a report presented to parliament in March 1848, it appears that the number of acres under crop in the province was

583,431, of which 398,463 were corn and beans, 74,532 potatoes and other roots, 108,618 hay and clover, and 1,818 flax.

The mountain-ranges are distributed round the coast. From their inland declivities the province has a comparatively level surface to the Shannon. This river thus becomes the main drain of the intermediate country, and carries to the ocean the waters of the rivers Suck and Gara, and of the lakes Gara and Key. The lakes Corrib, Mask, and Carra discharge their waters southward near Galway; and those of lakes Conn, Anow, and Gilly, northward near Sligo. The central plain is mostly of limestone formation; while the surrounding mountains are formed of sandstone, clay slate, granite, and quartz. A large amount of the surface is covered with bog; and the province generally is the least productive in Ireland.

Connaught was formerly a kingdom of the Irish Pentarchy. Its kings were of the race of O'Connor. It enjoyed a comparative independence until the year 1590, when it was made shire-ground under the 11th Eliz. c. 39, and divided into six counties, viz. those above enumerated, and Clare, which had formerly been part of Munster. In 1602 Clare was reannexed to the latter province, yet so late as 1792 remained on the Connaught circuit. In the various rebellions down to the end of the seventeenth century, Connaught was the refuge of the fugitive and dispossessed Irish. The Irish language is still very prevalent; and the condition of the poorer classes to this day attests the miserable circumstances which brought the population together.

CONNECTICUT, one of the United States of North America, is bounded N. by Massachusetts, S. by Long Island Sound, E. by Rhode Island, and W. by New York. It lies between 41° and 42° 2′ N. lat., and 71° 80′ and 73° 15′ W. long. The area is 4674 square miles, or 2,991,360 acres. The population in 1840 was 309,951, of whom 301,856 were whites, and 8095 free coloured.

Connecticut has a sea-coast of about 95 miles, with many bays and harbours. The surface is generally hilly, but not mountainous, the only range of considerable elevation being the southern portion of the Green Mountains, which crosses the north-western part of the State. The largest river is the Connecticut, which flows southwards through the middle of the State. It rises in Lower Canada, about 45° 20′ N. lat., and its whole course is probably about 400 miles to its outlet in Long Island Sound. It is navigable for vessels drawing 10 feet water to Middletown, 36 miles from the sea, at the head of the tide-water, and for vessels drawing 8 feet to Hartford, 50 miles from the sea. The Housatonic, which has a southern course of about 150 miles from Massachusetts, is navigable for small vessels 12 miles to Derby. The Thames, which enters the sea a little below New London, is navigable 16 miles to Norwich. The Farmington Canal extends from New Haven, at the mouth of the Quinnipiac, to Northampton in Massachusetts. The Norwich and Worcester Railroad extends 58½ miles; the New Haven and Hartford Railroad, 86 miles; and the Housatonic Railroad extends from Bridport 73 miles to the northern boundary of the State, and is continued thence to West Stockbridge in Massachusetts.

The soil of Connecticut is generally good and well cultivated, but is for the most part better suited for grazing than tillage. Iron ore of superior quality is obtained, and there are quarries of fine marble and excellent freestone. The climate is healthy, but subject to extremes of heat and cold.

The foreign trade is chiefly with the West Indies. The exports in 1840 amounted to 518,210 dollars; the imports to 227,072 dollars. The coasting trade is considerable, and many persons are employed in the fisheries. In 1840 there were in the State 119 woollen manufactories, 116 cotton manufactories, and numerous others of iron, leather, &c.

There are six cities in Connecticut. *Bridgeport*, 75 miles S.S.W. from Hartford, stands on the west side of an arm of Long Island Sound. It had in 1840 twenty vessels engaged in the coasting trade, and five in the fisheries. Population, 4570. *Hartford* is situated on the west side of the Connecticut, 50 miles from its mouth, at the head of the sloop navigation, but the river has been made navigable for boats 220 miles to the mouth of the Wells' River in Vermont. A covered bridge, 1000 feet long, connects Hartford with East Hartford. Steam-boats ply regularly to and from New York. The population of Hartford in 1840 was 9468; of East Hartford, 2389. *Middletown* stands on the west bank of the Connecticut, 34 miles from its mouth. It is at the head of the ship navigation, and there is 10 feet water at its wharfs. Population, 3511. *New Haven* is situated round part of a bay which enters the State from Long Island Sound. The harbour is safe, but in many parts shallow, and is gradually filling up. The foreign and coasting trade is considerable, and the shipping, in 1840, amounted to 11,500 tons. Population, 12,960. *New London* is situated on the Thames, 3 miles from the mouth. The harbour is the best in Connecticut, and one of the best in the United States. Population, 5519. *Norwich* is situated on the Thames, at the head of the tide navigation, and 13 miles N. from New London. The town is on the declivity of a high hill, and the streets rise above each other like terraces, those in the rear overlooking those in front. Population, 4200; but, including the township, 7289.

Connecticut contains 3 colleges: Yale College, at New Haven, founded in 1700, had, in 1846, 33 instructors, 5544 alumni, 424 students, and a library of 44,000 volumes. Washington College, or Trinity College, at Hartford, had 8 instructors, 257 alumni, 80 students, and a library of 8000 volumes; the Wesleyan University, at Middletown, had 8 instructors, 249 alumni, 119 students, and a library of 12,000 volumes. There were, in 1840, 127 academies and grammar-schools, with 4865 students; and 1619 common and primary schools, with 65,739 scholars. The school-fund of Connecticut amounted in 1846 to 2,069,885 dollars.

The government of the State is vested in a

governor, lieutenant-governor, senate, and house of representatives. The senate consists of not less than 18, nor more than 24 (at present 24). The members of the house of representatives are at present 215. The legislature meets annually, alternately at Hartford and New Haven. The State sends 2 senators and 4 representatives to Congress.

Two colonies originally settled in Connecticut in 1633 and 1638; they were united by charter of Charles II. in 1665. The constitution of the United States was adopted Jan. 9, 1788.

(Haskel and Smith, *United States Gazetteer; American Almanac*, 1847.)

CONOELIX, or CONOHELIX, a genus of turbinated shells (*Gasteropoda*) established by Mr. Swainson for a group which he regards as intermediate between the cones and volutes. Shell coniform; spire very short; outer lip simple. columella plaited; aperture linear, narrow, longer than the spire. Type, *Conœlix lineatus*, Swainson. Animal not known.—Locality, coasts of Tahiti, Raiatea, and the Pelew Islands, &c.

CONOID (like a cone), a term sometimes applied, but in this country only, to the surface generated by the revolution of a conic section about its axis.

CONON, an Athenian general, was the son of Timótheus. In B.C. 413, in the 18th year of the Peloponnesian War, he had the command at Naupactus on the Corinthian Gulf. Conon was the chief of the ten generals who were appointed to the command of the Athenian fleet, when Alcibiades and Thrasybúlus were removed from office; and, though at first beaten in a sea-fight by Callicratidas, the Lacedæmonian general, he afterwards gained a signal victory at Arginusæ. Lysander, being appointed a second time to the command of the Spartan fleet, engaged with Conon at Ægospótami, and defeated him B.C. 405. Conon fled to Sálamis in Cyprus, where Evágoras was king. The negotiations, which he soon commenced with the Persian satrap Pharnabazus, terminated in a union of the Persian and Athenian forces with those of Evágoras against the Lacedæmonians. Evágoras, Conon, and Pharnabazus together, raised a powerful fleet, and, falling in with the enemy's fleet near Cnidos, they gained a complete victory, B.C. 394. The consequences of this victory were of great importance to Athens. Conon and Pharnabazus followed up their success by an invasion of the Thracian Chersonese. Town after town submitted to them, and the people abandoned their lands. In the ensuing spring, they proceeded to the coast of Laconia, and ravaged the country, B.C. 393. Conon seized the opportunity for obtaining from Pharnabazus many important favours for his country. The satrap allowed him the use of his fleet for recovering the payment of tribute from the islands, and gave a large sum of money towards rebuilding the long walls at Athens. At this time Conon appears to have returned to Athens amidst the congratulations of his countrymen.

At the time when Antalcidas was sent on an embassy from Sparta to conclude a peace with the Persian king, Conon, the Athenian ambassador, was one of those who refused to give their assent to the terms which were proposed; and he was imprisoned by the Persian minister Teribazus, on pretence of his adopting measures detrimental to the great king. Of what became of him afterwards, we have no certain information. He appears to have died about B.C. 388. He had a wife in Cyprus at the time of his death.

(Xenophon, *Hellenica*, i. 4-7; iv. 3-8; Diodorus Siculus, xiii. 48, 77, 78; xiv. 39, 79, 83, 84, 85, 86; Nepos, *Life of Conon*; Plutarch, *Life of Lysander*, and of *Artaxerxes*.)

CONON, of Alexandria, a friend of Archimedes, mentioned in his writings as having a great knowledge of geometry. He was the proposer of the spiral which bears the name of Archimedes.

CONRAD I., II., III., IV. [GERMANY.]

CONRADIN. [ANJOU, COUNTS AND DUKES OF.]

CONSANGUINITY, or KIN, is the relation subsisting between persons who are descended from the same common ancestor. There can be no legal consanguinity without a legal marriage. Consanguinity is either *lineal* or *collateral*. Lineal consanguinity subsists between persons who are related to each other in the direct ascending line, as from son to father, grandfather, great-grandfather, &c.; or in the descending line from great-grandfather to grandfather, father, and son. Collateral kindred are those who, though they have the same blood, derived from a common ancestor, and are therefore *consanguinei*, do not descend one from the other. Thus brothers have the same blood and are descended from a common ancestor, but they are related to each other collaterally, and the children and descendants of each of them are all collateral kinsmen to each other. The Canon Law and the Roman Law have different modes of computing the degrees of collateral consanguinity. According to the Canon Law, which has been followed for some purposes by the law of England, we begin at the common ancestor and reckon downwards to the persons whose degree of consanguinity we desire to ascertain, counting each generation as a degree: and the degree of consanguinity in which they stand to each other is the degree in which they stand to their common ancestor, if they are removed from the common ancestor by the same number of degrees; if they are not, their degree is that in which the more remote of them stands to the common ancestor. Thus (to use the example given by Sir William Blackstone), Titius and his brother are related in the first degree, for from the father to each of them is counted only one; but Titius and his nephew are related in the second degree, for the nephew is two degrees removed from the common ancestor, namely, his own grandfather, the father of Titius. On the other hand, in this supposed case, the Romans placed Titius and his nephew in the third degree of consanguinity, for they count all the degrees from one given person upwards to the common ancestor, and downwards from that common ancestor to the person whose degree of relationship to the first person it is the object to establish. Thus they would count from Titius's nephew to his grandfather two degrees, and one more from the grandfather to Titius. By the law

of England, all persons related to each other by consanguinity or affinity, nearer than the fourth degree of the Roman law, are prohibited from marrying, except in the ascending or descending line (in which the case is hardly possible by the course of nature); and by Statute 5 & 6 Will. IV. c. 54, s. 2, it is enacted, 'that all marriages celebrated after the date of that act between persons within the prohibited degrees of affinity or consanguinity shall be absolutely null and void to all intents and purposes whatsoever.' Under the Statute of Distributions, 22 & 23 Car. II. c. 10, in making the distribution of an intestate's personal estate among the next of kin, the computation of degrees of kindred is according to the Roman law, which has probably been adopted in this case, because the other provisions of the statute are mainly taken from the Roman law. In England real estate descends to the heir at law or to the customary heir, and the descent is regulated by the general doctrine of consanguinity of the common law and the Statute of 3 & 4 Will. IV. c. 106. (*Novell.*, 118; Blackstone's *Essay on Collateral Consanguinity*, and Blackstone's *Commentaries*, vol. ii. p. 202.)

CONSCIENCE, COURTS OF, or *Courts of Request*, were abolished by 9 & 10 Vict., c. 95.

CONSCRIPTION is the name given to the mode of recruiting the French army. Under the old monarchy the army was recruited chiefly by voluntary enlistment; but, when the revolution commenced, the old army was broken up, the whole nation was called to arms, and volunteers were at first found in abundance. It was however soon found necessary to have soldiers bound by a permanent obligation, and in numbers beyond what were afforded by the customary system. In 1798 General Jourdan presented to the Council of Five Hundred a project of a law for a new mode of recruiting, under the name of conscription. This project was approved by the legislature, and passed into a law 5th of September, 1798. By this law every Frenchman from the age of twenty to twenty-five was declared liable to be called out to serve in the regular army. Every year lists were made in every department of the young men of the age above stated, divided into five classes, according to age. The number of men required for that year being made known by the Government, and voted by the legislature, a distribution was made among the departments and districts of the quota which each was to furnish. The number required was then taken by lot from the first or junior class, and, when that was exhausted, from the second, and so on. This operation was repeated every year. The first levy by conscription in 1799 was 200,000 men. By an arrêté, 19 Vendemiaire, year xii. (12 October, 1803), severe penalties were enacted against refractory conscripts, that is, those who had not joined their regiments. During the existence of the power of Bonaparte, the levies under this law were enormous, and few soldiers, unless disabled by infirmities or wounds, ever got their discharge. The time of service was unlimited. By the law of France during the reign of Louis XVIII., Charles X., and Louis Philippe, the harshness of the conscription, the principle of which, though not the name, was retained, was greatly mitigated, and the soldier was entitled to his discharge after five years' service. Exemptions were also granted to the single sons of poor parents, and upon other humane considerations, as well as in cases of delicate health of young men applying to the learned professions, &c.; all which considerations were entirely overlooked in the sweeping conscriptions of the empire. What alterations will now (April 1848) be made, it is not possible to say at present. A system somewhat similar to the conscription exists in Prussia and other German states.

CONSECRATION (*consecratio*), the act of sanctifying or making holy, consists in the solemn appropriation or dedication of any thing to the service of the Deity. In modern times the consecration of men is usually called *ordination*, except in the case of kings and bishops, when the performance of the rites of sanctification is still named consecration. When applied to temples, churches, and altars, it is generally termed *dedication*. Under the Jewish theocracy not only men and beasts were consecrated to the Lord, but houses, fields, and the walls of Jerusalem. (Leviticus, xxvii.; Nehemiah, xii. 27.) Churches are not recognised as such by the law of England until they are consecrated by a bishop. The form used by the Church of England is given at length in Bishop Gibson's 'Codex Juris Ecclesiastici Anglicani,' pp. 1459–1463. Consecration is generally understood to change, not the nature of the thing consecrated, but merely the *use* of it; and in this opinion the Roman Catholics appear to acquiesce with regard to numerous objects which they usually consecrate; as church bells, candles, water, oil, crosses, pictures, &c. But, with respect to the consecration of the eucharistic bread and wine, they maintain that a complete change is effected in the thing consecrated.

CONSERVATORS OF THE PEACE, before the institution of justices of the peace, were persons who by the common law of England were appointed for the preservation of the public peace. These conservators, whose powers were far inferior to those of modern justices of the peace (consisting almost entirely of the authority to take sureties for the peace and for good behaviour), were of several kinds. Certain high functionaries were general conservators by virtue of their offices. Thus the king, the lord chancellor or lord keeper, the judges of the Court of King's Bench, and the master of the rolls were intrusted by the common law with the general conservancy of the peace throughout the realm, as incidental to their several offices. Other officers again were conservators only in special places; thus the judges of the Common Pleas and barons of the Exchequer were conservators of the peace only within the precincts of their several courts. All the different kinds of conservators of the peace, excepting those who have the duty cast upon them as incidental to other offices, were entirely superseded upon the establishment of the system of justices of the peace, in the early part of the reign of Edward III. [JUSTICES OF THE PEACE.] (Lambard's *Eirenarcha*, book i. c. 3.)

CONSERVATORY, properly so called, is a brick building heated by artificial means, having its whole southern part closed by large glazed sashes, which may be opened or shut at pleasure. Its floor is generally of stone, and a part of it is occupied by a stage on which plants in pots can be placed. Plants when in a growing state require an abundant supply of light: a conservatory is ill calculated, on account of its solid roof and sides, for the admission of light, and consequently a conservatory is not suitable for plants in a growing state; but plants when torpid, as in the winter season, require a very moderate supply of light, and this a conservatory is sufficiently calculated to admit.

A house of this kind is best suited for gardens of considerable extent, where a large number of plants is required during the summer for the ornament of the flower garden and shrubbery. Under such circumstances the erection of conservatories is the cheapest, the most efficient, and the most ornamental mode of preserving in a healthy state during winter not only oranges, myrtles, and similar plants, but in general all the species which are natives of countries that, without experiencing severe frost, are cold enough during winter to suspend the vital energies of vegetation. [GREENHOUSE.]

CONSIDERATION. This is a Latin word, 'consideratio,' which, as well as the verb 'considero,' was used by Cicero and others to express 'careful observation,' or 'reflection,' or 'deliberation before action.' It has nothing to do with looking at the stars, as the Latin grammarian Festus states, but it implies something which is nearer to the business of common life than stargazing; it implies the sitting down of a man in a place alone or with others. The word 'consideration' means 'deliberation' in the English language of common life.

In the English system of law, consideration has a technical meaning. It is stated to be the doctrine of English courts that all contracts, which are not contracts under seal, require a consideration. There are many definitions of consideration. A consideration is defined (Smith's 'Law of Contracts,' p. 83) to be 'any benefit to the person making the promise, or any loss, trouble, or inconvenience to, or charge upon, the person to whom it is made.'

Simple contracts cannot be enforced if there is no consideration. A man may promise to give another 1000*l.*, but the promise cannot be enforced unless there is a consideration. A consideration must of course be a thing lawful.

Considerations are sometimes divided into valuable considerations and good considerations. Marriage, that is, a marriage intended, and afterwards effected, is a valuable consideration; money, and any other thing which is of the nature of property, and has a money value, are valuable considerations. Therefore, if a man parts with his estate for a valuable consideration, the transaction is valid, and he who gets the estate has, so far as the consideration is concerned, a good title. A good consideration is the consideration of natural affection between blood relations, and a man may give his estate to another for such a consideration. But this kind of consideration is not sufficient to maintain the validity of a conveyance of property against the claim of a subsequent purchaser for valuable consideration. Thus, if a man after his marriage settles an estate upon his wife and children in consideration of his natural affection, and then sells the estate for money, the purchaser will have the estate, and not the wife and children. Such a settlement after marriage is called voluntary or gratuitous. A settlement of property made in consideration of a future marriage, which afterwards takes place, is a settlement for valuable consideration. The actual settlement may be made after marriage, if it is made pursuant to a written agreement entered into before marriage.

In the Statute 13 Eliz. c. 5, the object of which is to prevent persons from cheating their creditors by disposing of their real or personal property, it is declared that the provisions of the act do not extend to estates or interests made or conveyed 'upon good consideration and *bonâ fide*;' and the good consideration here means money, or money's worth, or a marriage which is then intended and afterwards takes effect. Good consideration is therefore equivalent to what has been above defined to be a valuable consideration.

The Acts 27 Eliz. c. 4, and 30 Eliz. c. 18, s. 3, make void, as against subsequent purchasers, all conveyances, &c. of real property which are made for the purpose of defrauding such purchasers, unless 'upon or for good consideration and *bonâ fide*.' This statute has received a singular interpretation, for it has been decided that it makes void a previous conveyance, though not made to defraud any one, if the consideration is not such as the statute intends; and accordingly, as in the case just stated, if a man settles his land after marriage on his wife and children, and then sells it, the prior settlement is void as a fraudulent conveyance.

A voluntary conveyance, then, by a man who is at the time insolvent is not valid against his creditors; but if a man is not insolvent at the time, a voluntary conveyance, that is, one where there is no valuable consideration, is valid against future creditors (13 Eliz. c. 5). A conveyance for valuable consideration, such as marriage, is a valid conveyance, even if a man be insolvent at the time. An insolvent man may cheat his creditors by settling his property on a woman with a view to marriage, and then marrying her; but, in certain cases, such settlements are not valid against creditors when made by a person who is subject to the bankrupt laws. A voluntary conveyance is not valid against a future purchaser for good consideration: it is a fraudulent transaction according to the construction of the 27th of Eliz., and as such is declared void against the purchaser. If the purchaser knew that there was such a voluntary prior conveyance, that makes no difference; his purchase is valid against such conveyance.

With respect to transfers and settlements of property, the fact of there being a good consideration is evidence that there is no fraud, and the absence of it is in some cases a presumption of fraud.

Every deed by which property is conveyed ought to show some consideration; for, though a deed is valid between the parties to it when no consideration is expressed, it may be invalid with respect to other persons who are not parties to it. No absolute amount of consideration is required; but a very small amount of consideration might in some cases raise a presumption of fraud, and indeed, even if the amount of consideration should be the full value of the thing conveyed, it may be necessary in some cases to inquire whether the consideration expressed was actually paid.

CONSISTORY is the spiritual court, formerly held in the nave of the cathedral church, or in some chapel, aisle, or portico belonging to it, in which the bishop presided, and had some of his clergy for assessors and assistants. This court is now held by the bishop's chancellor or commissary, and by archdeacons or their officials, either in the cathedral church or other convenient place in the diocese, for the hearing and determining of matters of ecclesiastical cognisance which happen within that diocese. The consistory courts grant probates of wills for the goods and chattels of a deceased person which are within their jurisdiction; but, if the deceased has *bona notabilia* in two dioceses, the probate must be granted by the prerogative court of the province. The officers of a consistory court usually consist of a judge, deputy-judge, registrar, deputy-registrar, and apparitor.

By Stat. 24 Hen. VIII. c. 12, an appeal lies from this court to the court of the archbishop of the province.

CONSOLS. [National Debt.]

CONSONANCE, in Music, a term nearly synonymous with Concord.

CONSONANT. [Alphabet.]

CONSPIRACY. Every conspiracy to do an unlawful act, which is injurious to individuals or to the public, is a misdemeanour by the common law of England. Many frauds affecting individuals, which are not the subject of prosecution as such, become indictable when they are effected by the co-operation of several confederates. Thus, if several persons agree by indirect means to impoverish a third person, as by circulating calumnies injurious to his character or credit, the offence is punishable as a conspiracy, though the concerted acts alone, when committed by individuals, could only have formed the subject of a civil action by the injured party. (Russell, *On Crimes and Misdemeanours*, vol. ii.)

CONSTABLE. This word is supposed by Ducange, Spelman, and other legal writers, to be corrupted from *comes stabuli*, a kind of master of the horse, frequently mentioned as an officer of state in the middle ages. (Ducange, 'Glossary.') The Constable of France had the chief command of the army, and had cognisance of military offences: it was also his duty to regulate all matters of chivalry, such as tilts, tournaments, and feats of arms. This office was suppressed in France by an edict in the year 1607: it was revived by Napoleon, and constituted one of the six grand dignities under the French empire; but it was abolished upon the restoration of the Bourbons in 1814.

After the Norman conquest we find in England an officer of the crown called the lord high constable, whose duties, powers, and jurisdiction were in most respects like those of the Constable of France. The office, for several centuries after the Conquest, passed by inheritance in the line of the Bohuns, earls of Hereford and Essex, and afterwards in the line of their heirs-general, the Staffords, dukes of Buckingham, in right of certain manors held by them by the feudal service of being constables of England. Since the attainder of the Duke of Buckingham for high treason in the reign of Henry VIII., upon which the manors in question were forfeited to the crown, the office of lord high constable has been extinct; and since that time the office has never been granted to any subject, excepting for some special occasion, such as the king's coronation, or trials of peers.

Chief Justice Fineux, in the reign of Henry VII., says that, when the superintendence of the peace of a county was found too great a task for the sheriff, hundreds were formed, and a conservator of the peace, under the sheriff, appointed in each, who was called a constable. This was the high constable, or constable of the hundred. As population increased and towns sprung up, it was found expedient to make a further subdivision for the preservation of the peace, and accordingly conservators were appointed for manors, villas, and tithings, who were then called petty constables. ('Year-Book,' 12 Henry VII. pl. 18.)

Constables at the present day are of two kinds: constables of hundreds, who are still called high constables; and constables of vills or tithings, who are called petty constables or tithingmen. Both high and petty constables were formerly chosen by the jury at a court leet, and were sworn in and admitted there by the lord or his steward; but in recent times the high constables have usually been chosen by the magistrates at quarter-sessions. The petty constables are still often chosen by the homage at the court-leet; but by the Stat. 13 & 14 Car. II. c. 12, sect. 15, it is enacted that, if any constable shall die or go out of the parish, any two justices shall make and swear a new constable, until the lord of the manor shall hold a court, or until the next quarter-sessions, who shall approve of them or appoint others. The duty of nominating and swearing the constables is now generally discharged by the justices of the peace.

By the Metropolitan Police Acts, 10 Geo. IV. c. 44, and 2 & 3 Vict. c. 47, the police force are appointed by direction of the Secretary of State, and sworn in as constables by the commissioners; and, in boroughs affected by the provisions of the Municipal Reform Act (5 & 6 Wm. IV. c. 76), constables are now appointed by the Watch Committee, under the authority of the 76th section of that statute. County and district constables (rural police) may be appointed by the justices at quarter-sessions, under 2 & 3 Vict. c. 93, and 3 & 4 Vict. c. 88; constables (police) for the protection of property on canals and rivers, by justices in counties, and by the Watch Committee in boroughs, under 3 & 4 Vict. c. 50. By these acts the duties of the office of constable are altered, as

well as the mode of appointment. By 5 & 6 Vict. c. 109, parish constables may be appointed by the justices from the lists to be returned by the vestries, and vestries may unite to appoint a permanent and salaried constable for a union of parishes. These recent modifications of the ancient office of constable are noticed under POLICE. The office of constable at common law is a yearly appointment, and if any officer has served longer than a year the justices at quarter-sessions will, upon his application, discharge him, and appoint another officer in his stead.

Besides these general constables, two or more justices of the peace, upon information that disturbances exist or are apprehended, are authorised by the Stat. 1 & 2 Wm. IV. c. 41, to appoint special constables; and by the 83rd section of the Municipal Reform Act magistrates in boroughs are authorised to swear in as many inhabitants as they think fit to act as special constables when called upon. The Act 5 & 6 Wm. IV. c. 43, and 1 and 2 Vict. c. 80, enlarged the provisions of 1 & 2 Wm. IV. c. 41, by enabling justices to appoint persons to act as special constables in other places than where they resided, and to pay constables engaged to suppress outrages by labourers and others engaged on railways and other public works.

By 7 & 8 Vict. c. 33, an act was passed for 'relieving high constables from attendance at quarter-sessions, in certain cases, and from certain other duties.'

In general, all the inhabitants within a district, borough, parish, or place, are liable to serve as constables; but they must be persons of good character and of competent ability; and the lord or steward of the manor at the leet, or the justices, may exercise a discretion as to the appointment of proper persons. It is obligatory upon a constable who has been legally appointed to serve the office, unless he can show some lawful exemption; and, if he refuses to serve, he may be fined or punished by indictment. Certain persons are exempt from serving the office; as members of the colleges of physicians and surgeons, and the Apothecaries' Company in London, practising barristers, attorneys, dissenting ministers following no trade or other employment except that of a schoolmaster, schoolmasters, and others.

The Metropolitan Police Act and the Municipal Reform Act contain provisions that the constables to be appointed under those statutes respectively shall have all such powers and privileges, and be liable to all such responsibilities as any constable has within his constablewick by the common law of this realm.

Every constable has authority to arrest persons who commit an affray, assault, or breach of the peace *in his presence*, and keep them in safe custody till they can be brought before a magistrate. By the Metropolis Police Act, and the Municipal Corporation Reform Act constables appointed under those acts are authorised, in charges of petty misdemeanour in the night-time, to take bail by recognisance for the appearance of the offender before a magistrate within a limited time.

A constable, who has reasonable cause to suspect that a felony has been committed, may arrest and detain the supposed offender until he can be brought before a magistrate to have his conduct investigated. A constable is bound to arrest any person whom he sees committing a felony, or any person whom another charges with having committed a felony; but, generally speaking, he has no authority to arrest for a misdemeanour, either upon his own reasonable suspicion or the charge of another person, without a magistrate's warrant.

By the Metropolitan Police Acts (10 Geo. IV. c. 44, and 2 & 3 Vict. c. 47), it is provided that any man belonging to the police force appointed under these acts may apprehend all loose, idle, and disorderly persons whom he shall find disturbing the public peace, and any person charged by another with having recently committed an aggravated assault, or any person whom he shall have just cause to suspect of any evil designs, and all persons whom he shall find between sunset and the hour of eight in the morning lying in any highway, yard, or other place, or loitering therein, and not giving a satisfactory account of themselves, and deliver them to the constable in attendance at the nearest watchhouse, to be secured until they can be brought before a magistrate. A constable may stop any person carrying by night a bundle or goods under circumstances of reasonable suspicion; and, if upon examining him his suspicions are not removed, he may detain him in his custody. A constable has also a general authority to apprehend for offences against the Vagrant Act, 4 & 5 George IV. c. 83, or against the Larceny Act, or the Malicious Injuries Act, 7 & 8 George IV. c. 29 and 30.

In the execution of a warrant, a constable acts only as a ministerial officer to the magistrate who signs it. He is the proper officer to a justice of the peace, and is bound to execute his warrants, and may be indicted for disobeying them. It is his duty to execute the warrant of a magistrate as soon as it comes to his hands; and where he arrests, or distrains, or does any other act, though it is not necessary that he should show his warrant, he ought always to give notice of it, and it is prudent to produce it when it is demanded; but, as the warrant constitutes his justification, he is not required to part with it. If the constable has a legal warrant to arrest for felony or breach of the peace, he may break open doors after having demanded admittance and given notice of his warrant; and if, after such notice, he is resisted and killed, it will be murder.

There are several provisions for the indemnity and protection of constables in the proper discharge of their duty.

(For fuller information upon the whole of this subject, see Viner's *Abridgement;* Bacon's *Abridgement;* and Burn's *Justice*, title 'Constable.')

CONSTABLE, JOHN, was born at East Bergholt, in Suffolk, in 1776. In his youth he was placed for about a year with a miller to learn the business, but his time was chiefly spent in contemplating and studying the beauties of natural scenery: he displayed much originality of observation in his attempts at portraying its beauties,

and his mind became gradually engrossed in sketching and the study of landscape. The result was his adoption of landscape-painting as a profession, in which he was instructed by R. R. Reinagle, R.A., and received much encouragement from Sir George Beaumont. In 1795 he visited London, but returned to his native place; in 1799 he again visited London with a view to try his fortune, and in 1800 he was admitted as a student into the Royal Academy. For many years he was a steady exhibitor in the Royal Academy, but his works attracted little attention, owing probably to the unpretending nature and extreme simplicity of his style. In 1820 he took a house at Hampstead, where he chiefly resided; he had also a house in Charlotte Street, Fitzroy Square, where he kept a gallery of his works, for, though admired, many of his paintings remained on the artist's hands. At length, on Feb. 10, 1829, Constable was elected a Royal Academician. He was taken ill on the night of the 30th of March, 1837, and died in less than an hour afterwards.

Constable has painted many excellent pictures, and all his works improve much in colour by age; the 'Corn-field,' in the National Gallery, is a very good specimen of his style, and is indeed one of his best works. 'The Chain Pier at Brighton,' 'Hampstead Heath,' and 'the Glebe Farm' are also among his best productions. His style is original and peculiar, and his scenes are generally extremely simple, for his attention was more engrossed by certain minutiæ and transient effects in nature than by a love for the picturesque, or what may be termed scenery. In one respect he carried this attention to minutiæ to an extreme, namely, the effect of the morning dew. He may have fallen into this error by his habit of early sketching; but an exact and judicious observer of nature, studying in all seasons and in all hours, could not fail to observe that this effect is extremely transient, and is but one, and not the most beautiful, of the ever-varying effects of nature.

A very elegant Life of Constable, by his friend Leslie, was published by Mr. Carpenter, with twenty-two engravings from his works by David Lucas—'Memoirs of the Life of John Constable, Esquire, R.A., composed chiefly of his Letters; by C. R. Leslie, Esquire, R.A.,' 4to., Lond. 1842.

CONSTANCE. [CONSTANZ.]

CONSTANCE, COUNCIL OF, was assembled in 1414 at the request of the Emperor Sigismund, chiefly to put an end to the great schism during which John XXIII., Gregory XII., and Benedict XIII., each claimed the rank and office of sovereign pontiff. The Council deposed all three, and elected Ottone, cardinal Colonna, as legitimate pope, by the name of Martin V. It was on this occasion that a canon or decree was passed, asserting the supremacy of a general council over the pope. The Council was also engaged in the trial of John Huss, who was summoned and appeared before it, and was arrested by order of the Council, notwithstanding a safeguard from the emperor. His doctrines were condemned as heretical, and as he would not retract he was publicly degraded from his priestly office, and then consigned to the civil magistrates, who by order of the emperor had him burnt. The Council condemned likewise the doctrines of Wycliffe, most of which were identical with those of Huss. Jerome of Prague, a disciple of Huss, having been brought before the Council, first retracted his obnoxious doctrines; but being still kept in prison, as his retraction was not considered to be sincere, he demanded a public audience, at which he declared that he had recanted only through a temporary weakness, and that he persisted in his master's doctrines; upon which he was also condemned to the stake, to which he went with the greatest serenity.

The Council had promised to occupy itself with a reform of church discipline, which was much wanted in that age; but it did little in that way, having been abruptly dissolved by the new pope, Martin V., in April 1418. The Council of Constance is one of the most noted in the history of the church, and was one of the most numerous ever assembled. Lenfant has given a full and instructive account of all its proceedings, session after session. (*Histoire du Concile de Constance*, 2 vols. 4to., Amsterdam, 1727.)

CONSTANS, son of Constantine, had for his portion, at his father's death, Italy, Africa, and Illyricum. His elder brother Constantine, who was envious of his share, attacked him, was defeated, and killed near Aquileia, A.D. 340; after which Constans took possession of his brother's dominions, and became emperor of the whole west. Magnentius, commander of the troops in Gaul, having revolted against him, Constans, who happened to be in that province at the time, fled towards Spain, but he was overtaken at the foot of the Pyrenees by some emissaries of Magnentius, and killed, A.D. 350. Constans protected the Christian faith, as established by the Council of Nicæa, against the Arians and Donatists. After his death Magnentius took possession of Italy and of Rome, and styled himself Augustus, until he was overthrown by Constantius. [CONSTANTIUS.]

CONSTANT, a quantity which remains the same throughout a problem. Thus in the question, 'required that point of a circle which is at a given distance from a given straight line,' the radius of the circle is a constant. If the problem require the use of twenty different points of the circle, the radius is the same for all.

Nothing is more common in mathematical works than the term *variation of constants*, which appears a contradiction. But its meaning is as follows:—a quantity which upon one supposition would remain constant becomes variable by the introduction of another supposition. Thus, taking into account the earth's attraction only, the longitude of the moon's node is constant; but, by the attraction of the sun and planets, its place is slowly changed. In this case one of the constants is said to vary.

CONSTANTINA (the *Qosthanthynah* of the Arabs), the capital of the French province of Constantina in Algiers, stands on a high rocky peninsula formed by the Rummel in 36° 20′ N. lat., 6° 28′ E. long., at a distance of 185 miles E. by S. from the city of Algiers, and 45 due S. from the Me-

diterranean. The peninsula is joined to the adjacent country by an isthmus on the south-west side. Before the French conquest of the town it is said to have had upwards of 40,000 inhabitants; the present population is stated at about 20,000. The city is surrounded by old walls, and entered by four gates, the elegant structure and sculptured decorations of which prove them to be the work of the Romans. The interior of the town has nothing remarkable. The streets are narrow and ill laid out. The houses are low and without windows; and they have sloping roofs, a circumstance that denotes a colder climate than that of the sea-coast where the houses have flat roofs, to which the inhabitants ascend in the evening to enjoy the cool breeze.

Constantina occupies part of the site of the ancient *Cirta*, which was the capital of Numidia, and the birthplace of the Numidian kings Masinissa and Jugurtha. After the defeat and death of Jugurtha, the ancient town passed, with the rest of Numidia, into the hands of the Romans, who, in the time of Julius Cæsar, sent out a colony to Cirta, which then got the name of *Cirta Sittianorum*. It continued under this name to be the chief town of Numidia Propria till the time of Constantine, from whom it was called Constantina. In recent times it was the residence of a Bey until its capture, after a murderous assault, by the French under General Danrémont and the Duc de Nemours in the year 1837. The city and its environs, especially the plain on the south-west side, abound in ancient Roman remains. Among these are—the bridge across the Rummel, which is adorned with bas-reliefs, and still in good repair; the four gates above mentioned; a triumphal arch; several sepulchral monuments; and numerous remains of cisterns, aqueducts, columns, and altars. The extent of surface over which these remains are spread proves the ancient city to have been much larger than the modern one. Below the bridge the Rummel turns northwards, and flows for about a quarter of a mile in a subterranean bed, issuing from which it forms a large cascade. From the height above this point criminals and infidels were precipitated into the river during the sway of the Arabs. The neighbourhood of Constantina is very fertile and well cultivated.

(Sallustius, *Bell. Jug.*; Shaw's *Travels in Barbary*; Balbi, *Géographie*.)

CONSTANTINE, Pope. [POPES.]

CONSTANTINOPLE (*Stamboul*), the capital of the Turkish Empire, is situated on the European side of the strait called the Bosporus, which connects the Sea of Marmara with the Black Sea, in 41° N. lat., 28° 58′ E. long. Including the suburbs, it has 600,000 inhabitants, composed of Turks, Arabians, Greeks, Armenians, Europeans, and Jews. The city stands on a sloping promontory of triangular shape, having one side towards the south, resting on the Sea of Marmara; a second facing the north-east, which runs along the western shore of the Golden Horn, a deep inlet from the Bosporus, which forms the harbour; while the third side faces the west, and is defended by a double line of high and strong walls, flanked with towers, which were erected by Theodosius II. The southern side of the city, extending from the Seven Towers, the most south-western point on the Sea of Marmara, to Seraglio Point on the Bosporus, is 5 miles in length. The north-eastern side, extending from this last-mentioned point to the Haïvan-Seraï or Menagerie, is upwards of 3 miles long; and the western side from the Menagerie to the Seven Towers has a length of 4 miles. The walls on this last side were formerly pierced by 7 splendid gates; but none of these now exist. Of the present gates the most famous is the Top-Kapu, or Cannon Gate, in defence of which the last Greek emperor, Constantine Palæologus, fell, and by a breach close to which the Turks made their triumphal entry into the captured city, May 29, 1453. A little north of the Top-Kapu the small river Lycus flows through the city in a S.S.E. direction to the Sea of Marmara. Outside the walls the ground is laid out for a considerable space in cemeteries, with dark cypresses and white marble tombs, except to the northward, in which direction the suburb of Eyub and others stretch for about a mile further along the Golden Horn. Along the Sea of Marmara and the harbour there are walls with numerous gates, but they are crumbling to decay.

In the angle between the Bosporus and the Golden Horn, on the north side of the latter, is the suburb of Galata, which was first built by the Genoese, and is now the principal place of residence for merchants and foreigners; here also the custom-house is situated, and foreign ships discharge and load. North of Galata lies the suburb of Pera, the residence of the foreign ambassadors; N.E. of Pera is the quarter of Demetri, the residence of the Greeks; eastward of Galata lies the suburb of Top-Khana, with its beautiful arabesque fountain and artillery barracks; and along the northern shore of the Bosporus buildings, cemeteries, and gardens extend for above two miles farther. Along the north-eastern shore of the Golden Horn are the principal industrial establishments, such as ship-building yards, arsenal, artillery barracks, cannon foundries, rope-walks, magazines, &c. The communication between the city and Galata, and the other north-eastern suburbs, is kept up by great numbers of *caïks*, or light wherries, the constant plying of which across the Golden Horn (here about 417 yards wide) presents a very animated appearance in the daytime. By the same means an active communication is also kept up with the large suburb of Skutari, on the Asiatic side of the Bosporus, which is 1 mile and 233 yards across from Seraglio Point. In Skutari the great caravans for Persia, Armenia, and other eastern countries assemble; and here also are considerable silk and cotton factories, and large warehouses for corn for the supply of the capital. Here also is the largest and most beautiful of the Turkish cemeteries. The view of Constantinople from the hill of Boulgourlou E. of Skutari is one of the most strikingly picturesque in the world.

The harbour formed by the Golden Horn is deep, commodious, well sheltered, and capable of containing above 1000 large ships, which may load and unload alongside the quays. The num-

ber of vessels that entered in 1840 was 5630, of which 170 imported British goods to the value of 1,189,904*l*. The other vessels were chiefly from Russian ports on the Black Sea. The departures in the same year were 5499. The port-charges on a British vessel are merely nominal; commission and other charges are moderate. About 2000 tons of coffee, 1,200,000 lbs. of sugar, 300,000 lbs. of spices, 2000 puncheons of rum, and very large quantities of cheap cottons are annually imported. Other articles of import are dye-stuffs, woollens, cotton-twist, cutlery, coals, iron, furniture, nails, butter, cheese, flour, paper, glass, watches, jewellery, &c. The exports are wool, silk, opium, otto of roses, wax, hides, bullion, diamonds, goat's hair and skins, valonia, box-wood, mohair, yarn, &c. Steamboats ply regularly to Trieste, Smyrna, Odessa, the Danube, and Trebisond, under the management of an Austrian company.

Having thus glanced at the site of Constantinople and its suburbs, and given some idea of its facilities for trade, it remains for us to notice briefly the most remarkable structures of the city itself.

The area of the triangle on which the city stands is occupied by gentle hills, which are highest towards the land side, and gradually decline to Seraglio Point, the Sea of Marmara, and the port. As Rome was built on seven hills, so the Roman founders of Constantinople called these the Seven Hills. The ridge of the first hill, setting out from the most eastern part, is covered by the Serai, or palace of the Sultan, behind which, a little on the reverse of the hill, the dome of Santa Sophia shows itself. This palace and its gardens occupy an area 3 miles in circuit, and cover the greater part of the site of the ancient Byzantium. From the circumstance that the principal entrance to the Seraglio is by a huge turreted gate (*porte*) formed by a lofty semicircular arch, the phrases 'Sublime Porte,' and 'Ottoman Porte,' have been used as equivalents for the court or power of the Sultan. The second hill is crowned by the bold and lofty dome of the Osmanieh Mosque. The still loftier mosque of Solyman the Magnificent towers on the third hill; whilst the lofty aqueduct of the Emperor Valens, which still pours its flood of water into the fountains of the city, unites the summits of the third and fourth hills. On a fifth point, the most elevated of the little chain within the triangle, there is a slender lofty tower, built in 1828, in which a guard is constantly kept to watch the breaking out of fires, which are very frequent and destructive in a city where all the private habitations are built almost entirely of wood. The situation of Constantinople upon hills is the main cause, not only of its picturesque beautiful appearance, but of its salubrity and comparative cleanliness. The lower edge of the city which touches the port, and the suburb of Galata, may be called filthy places, but no other parts.

With the exception of the land walls, and the mosque of Santa Sophia, there does not remain much of the Byzantine architecture. The Turks, instead of digging in the quarry, have knocked down the Grecian buildings to use the materials in their mosques, minarets, and fountains, or to cut them up into tomb-stones. There is a vast subterranean edifice (called by the Turks the palace of the 'thousand and one pillars'), the roof of which is supported by an immense number of columns, each column being formed of three pillars placed one on the top of the other. It was originally one of the immense cisterns or reservoirs made by the Greek emperors, and always kept full of water to supply the city in case of a siege. They have long been destroyed, or suffered to go to ruin. This particular one is dry. There is another which still exists as a cistern, and may be described as a subterranean lake, extending under several streets, having an arched roof that covers and conceals it, supported on 336 marble pillars. The famous Hippodrome, to which the Turks give the translated name At-Meidan, or horse-course, retains little of its ancient splendour. It is now not a circus, but an oblong open space, about 300 paces long by 150 wide. It is flanked on one side by the mosque of Sultan Achmet. At the upper end of the Hippodrome there is a granite obelisk, partly covered with hieroglyphics, which is called after Theodosius. Near this obelisk is the fragment of a wreathed column of bronze, which has been the subject of many discussions. The marble pyramid of Constantine Porphyrogennetus, does not at present stand on the At-Meidan, though it is near it, and visible from it: it has long been stripped of the plates of gilded bronze that once covered it; the shaft is held together by rude iron hoops, and blackened by the many conflagrations that have raged round it. It is about 90 feet in height, and 33 in circumference.

Many of the mosques, of which the city contains upwards of 300, are distinguished by grandeur and beauty. There are 14 chief or imperial mosques, all lofty, and magnificent in their general dimensions, and built from base to dome of enduring materials, chiefly of white marble, slightly tinged with gray. Some of these have two, some four, and one (that of Sultan Achmet) has even six of those light, thin, lofty, arrowy, and most graceful towers called minarets. The mosque of Santa Sophia, once a Christian cathedral, and rich in historical recollections, we cannot attempt to describe. A full account of it will be found in the authorities referred to at the end of this article. The mosque of the Sultan Achmet is deemed the grandest edifice in Constantinople. The colleges and hospitals, which are generally attached to or near the great mosques, offer no striking architectural features; but some of the detached chapels or sepulchres (*turbés*) where sultans, viziers, and other great personages repose, are handsome. The spacious barracks may be reckoned among the public ornaments of the city and suburbs.

The public baths, of which there are 130 within the walls, with their very low and small flat domes, do not contribute to the beauty of the city externally, though within many of them are exceedingly handsome and spacious. The public fountains are numerous: some of them,

with their pure white marble façades, elaborate arabesque ornaments, and Chinese roofs, are most beautiful objects. All the water, the daily consumption of which is immense, is conveyed by subterranean aqueducts from artificial lakes 10 or 12 miles distant from the city. With the exception of one very long street, which traverses the city nearly from the high walls of the Seraglio to the gate of Adrianople, the streets are narrow, winding, and uncommonly dull and deserted. The *gazeboo* or *shah-nishins* (projecting windows) are latticed and closed; and many of the houses have no windows at all towards the street, but only a low narrow dingy door. All the life and activity of the interior of the city is concentrated in the bazaars. Towards the evening the coffee-houses, which are excessively numerous, are much thronged. There are no lamps or lights of any kind in the streets at night. The Turks retire to their homes at sunset, and never stir abroad till next day, except in case of a fire, when they carry a large paper lantern, an appendage which if they are found without, they are taken up by the police and fined.

The dogs of Constantinople are among its wonders; they belong to no individual, but are supported by all; their litters are never destroyed, and they act as scavengers, feeding upon the offal thrown into the streets, and upon the carcasses of men and other animals washed ashore. Each dog belongs to a district of his own; should he trespass upon a neighbouring territory, he is immediately driven off by the dogs that occupy it.

Constantinople covers the site of the ancient BYZANTIUM. The present city was founded in A.D. 328 by the Emperor Constantine, who gave it his name, enriched it with treasures of art taken from all parts of the Roman world, and soon made it the rival of Rome itself. It was taken from the degenerate Greeks in 1204 by the Venetians (under 'the blind old Dandolo') and the French, who attacked it on the side of the port. After remaining 57 years in the hands of the Franks, it was retaken by the Greeks in 1261 under the Emperor Michael Palæologus. It was taken by the Turks in 1453.

(Hope's *Anastasius;* Turner's *Tour in the Levant;* Von Hammer; Hamilton's *Asia Minor;* Murray's *Handbook for Travellers in the East.*)

CONSTANTI'NUS, FLA'VIUS VALE'RIUS (*Constantine the Great*), the son of Constantius Chlorus, was born in 274. Being in Britain at the time of his father's death, he was proclaimed emperor by the soldiers, but he prudently referred his nomination to Galerius, who acknowledged him only as Cæsar and governor of the provinces which had long been administered by his father. Passing over into Gaul to oppose the Franks, Constantine defeated them as well as the Alemanni, and behaved with great inhumanity to the prisoners. Maxentius, the son of Maximianus, caused a revolt at Rome while Galerius was absent in the East, and Maximianus himself, having come to Rome, resumed the title of emperor, and took Maxentius as his colleague. Severus, whom Galerius ordered to put down this insurrection, was betrayed by his troops, and put to death by Maximianus. Fearing the vengeance of Galerius, Maximianus went to meet Constantine in Gaul, and gave him his daughter Fausta in marriage. Constantine was now acknowledged Emperor of the West. Maximianus, having quarrelled with his son Maxentius, left Rome for Pannonia, where he met Galerius, and Diocletian, who had left his retirement at Salona for the purpose of appointing Licinius a new Cæsar, in the room of Severus. There were then six emperors and Cæsars, Maximinus, Maxentius, Galerius, Constantine, Maximianus, and Licinius. Galerius soon after acknowledged both Constantine and Maximinus, as emperors and Augusti equal to himself. Maximianus attempted to dispossess Constantine of his authority by exciting his soldiers to revolt, but he was taken at Massilia by Constantine, who treated him with great indulgence. Maximianus, having next attempted to murder Constantine in his bed, was seized and put to death. In the year 311 Galerius published an edict to stop the persecution against the Christians; this document bears the name of three emperors, Galerius, Constantine, and Licinius. Galerius soon after dying, Licinius took possession of his dominions as far as the Hellespont, and Maximinus had Asia. Maxentius continued to govern Italy, and was making warlike preparations against the other emperors, when Constantine moved with an army from Gaul to attack him, A.D. 312. Constantine marched upon Rome, where he defeated Maxentius a few miles from the capital, on the right bank of the Tiber. In recrossing the bridge in his flight, Maxentius was drowned. Constantine entered Rome on the 29th of October, and was acknowledged emperor by the senate, who ordered the Triumphal Arch which still exists to be raised to him as the liberator of Rome. He is said to have behaved with moderation after his victory.

In the year 313, Licinius came to Rome, and married Constantia, the sister of Constantine. In the East a war broke out between Licinius and Maximinus, who was defeated, and died of poison at Tarsus: all his family were put to death by Licinius. The empire was now divided between Constantine, who ruled over the west, including Italy and Africa; and Licinius, who had the eastern provinces, with Egypt.

Constantine now openly favoured the Christian communion. He ordered a council of the bishops of the west to assemble at Arles to settle the schism of the Donatists, and went himself to Arles; but while there he received news of the hostile intentions of Licinius, which made him march in haste into Illyricum. The two armies met near Sirmium in Pannonia, and again in the plains of Thrace, after which Licinius sued for and obtained peace, by giving up to Constantine Illyricum, Macedonia, and Greece. On visiting these new provinces, Constantine promulgated several laws, by which he abolished the punishment of the cross, ordered that the children of destitute parents should be maintained at the public expense, and allowed the emancipation of slaves to be effected in the Christian churches in presence of the clergy without the presence of the civil magistrate. Constantine spent several years in visiting the

provinces of the empire, and promulgating new laws, which were conceived for the most part in a humane and liberal spirit. He also prohibited nocturnal assemblies, and certain obscene rites of Paganism; but he did not attempt to forbid the exercise of the old religion.

By an edict of March 321, he ordered the observance of the Sunday, and abstinence from work on that day. War again broke out between the two emperors, in which Licinius was defeated and ultimately put to death, A.D. 324. Constantine, being now master of the whole empire, extended to the east his laws in favour of the Christian religion. In 325 he assembled the first universal council of Nicæa, which he attended in person. From Nicomedia, where he resided for some time, he issued an edict inviting all the subjects of the empire to address their complaints to him in person against any abuse of authority of the governors and magistrates. By another edict he abolished the fights of gladiators, and ordered that the convicts, who were formerly compelled to fight against them or against the wild beasts, should be employed in working the mines.

In the year 326 he repaired to Milan, and then to Rome. He remained at Rome a short time, and left it in disgust, never to return to it. In this same year is recorded the tragical death of Crispus, the eldest son of Constantine by a former wife or concubine, a young man who had been educated by Lactantius, who has been praised by Eusebius, and who had given proof of his courage and abilities on many occasions. He was falsely accused by his step-mother, Fausta, of having endeavoured to seduce her, some say of having aspired to the sovereign power, and upon one of these charges his father had him beheaded. But it was soon discovered that the young prince was innocent, and that Fausta had been repeatedly guilty of adultery, upon which she was put to death with several of her accomplices.

About the year 328 Constantine began to build his new capital, which was called after his name Constantinople, or the city of Constantine. It was a Christian city, chiefly inhabited by Christians, and no heathen temples were built in it. In May 330, the new town was solemnly dedicated to the Virgin Mary. In the year 328 he recalled several Arian bishops, Eusebius of Nicomedia among others, who had been exiled by the council of Nicæa. Athanasius having opposed the readmission of the Arians into the church communion, this led to a long controversy which lasted till the death of the emperor. Constantine was fond of religious polemics, and himself wrote on the Arian and Donatist controversy. The remaining years of Constantine's life were chiefly spent in embellishing his new capital and attracting inhabitants, especially Christians, to it; the rich by privileges, the working men by daily distributions of corn and oil. He made a division of the empire, to take effect after his death, among his three sons, whom he had named Cæsars, giving to Constantine, the eldest, the Gauls, Spain, and Britain; to Constans, Illyricum, Italy, and Africa; and the east to Constantius. To Dalmatius, one of his nephews, he gave Macedonia and Achaia, and the other, Annibalianus, he made king of Pontus and Cappadocia. In the year 337, when preparing to march against the Persians, who had commenced hostilities, he fell ill at Nicomedia; and died, in his sixty-fourth year. His body was transferred to Constantinople, where it was buried, after a sumptuous funeral. The senate of Rome placed him among the gods, and the Christians of the East reckoned him among the saints: his festival is still celebrated by the Greek, Coptic, and Russian churches, on the 21st of May.

The character of Constantine has been the object of various and contradictory judgments, according to the religious and political spirit of the various writers.

(Eusebius, *Life of Constantine;* Zosimus; Aurelius Victor; Eutropius, and other numerous writers, a list of whom is given by J. Vogt, *Historia Litteraria Constantini Magni*, 1720.)

CONSTA'NTIUS I., called CHLORUS, on account of his habitual paleness, son of Eutropius and of Claudia, niece of the Emperor Claudius II., was born about A.D. 250. He served with distinction under Aurelian, Probus, and Diocletian. In the year 291, Maximianus, the colleague of Diocletian, named him Cæsar and his colleague, while Diocletian chose Galerius; the administration of the empire was divided among the four. Constantius had for his share the Gauls, Spain, and Britain. Both the new Cæsars were obliged to repudiate their wives. Constantius, whose first wife was Hélena, the mother of Constantine the Great, married Theodóra, daughter of Maximianus; Galerius married Valeria, daughter of Diocletian. Constantius carried on war against the Franks on the Lower Rhine. He restored the town of Augustodunum (Autun), which had been devastated by Tetricus, one of the thirty tyrants. He then repaired to Britain, with Asclepiódotus, one of his lieutenants, who defeated Allectus (A.D. 300), the successor of Carausius in the usurped dominion of the island. Britain was thus restored to the empire after a revolt of ten years. On his return to Gaul, Constantius went against the Alemanni, whom he defeated with great slaughter, and drove beyond the Rhine. About this time he founded the town of Constantia (Constanz). In the year 304 the two emperors, with the two Cæsars, came to Rome, where they enjoyed the honour of a triumph. In the following year Diocletian and Maximianus abdicated, and appointed Constantius and Galerius their successors. Constantius continued to administer his old government of Gaul, Spain, and Britain. His administration was equitable and humane. He put a stop to the persecutions against the Christians, and employed many of them about his person. The last campaign of Constantius was against the Caledonians, some say against the Picts, whom he defeated. He died at York in the arms of his son Constantine, whom he appointed his successor A.D. 306. By his second wife Theodora, Constantius left several children, Dalmatius, Julius Constantius, who was the father of Constantius Gallus and of Julian the Apostate, and Constantia, afterwards the wife of Licinius.

CONSTA'NTIUS II., FLAVIUS JULIUS,

son of Constantine the Great, was left, by his father's will, Emperor of the East. The troops however, in order to secure the empire to the three sons of Constantine, killed Julius Constantius, half-brother of the late emperor, Dalmatius and Annibalienus, his nephews, and other of his relatives. This massacre was allowed by Constantius; only two nephews of Constantine escaped, Gallus and Julianus, afterwards emperor. Constantius was repeatedly engaged in war against the Persians and the Armenians, but with little success on his part. After the death of Constans, A.D. 350, Constantius marched against Magnentius to revenge his brother's death, and to take possession of his dominions. A desperate battle was fought, A.D. 351, near Mursa, on the banks of the Drave, in which Constantius gained the victory. Magnentius escaped into Italy, but Constantius was too much weakened by his victory to follow him until the next year, when he entered Italy, defeated Magnentius again, and obliged him to escape into Gaul. In the year after, 353, Constantius again defeated Magnentius in Gaul. The usurper, finding himself forsaken by his soldiers, killed himself. Constantius now became master of the West as well as of the East, and thus reunited the whole empire under his dominion. He had appointed his cousin Gallus as Cæsar and governor of the East, when he set out to oppose Magnentius. In the same year, 353, Constantius assembled a council at Arles, which was composed of Arian bishops. The emperor favoured that sect, and persecuted the orthodox, or Nicæans. In 354, Constantius, having received repeated complaints of the cruelties committed by Gallus in the East, sent for him and caused him to be beheaded in Dalmatia. Meantime the Franks and the Alemanni had passed the Rhine, and destroyed Colonia (Cologne) and other towns; the Quadi and the Sarmatians were ravaging Pannonia, and the Persians attacked the eastern provinces. In this emergency, Constantius, being at Milan in November 355, proclaimed his cousin Julian as Cæsar, gave him his sister Helena in marriage, and sent him as commander to the Gauls. In the following year Constantius forbade under pain of death any sacrifice to idols. In 357 the emperor repaired to Rome for the first time, and was received with great pomp by the senate, and public festivals and games were celebrated in his honour. He caused the obelisk, which Constantine had removed from Heliópolis to Alexandria, to be carried to Rome, where it was raised in the Circus Maximus: it is now called the Lateran Obelisk. Constantius, having returned to the east, defeated the Sarmatians, while Julian conquered the Germans on the Rhine. Constantius was making preparations against Julian, who had been proclaimed emperor by the soldiers at Paris, when he was taken ill at Tarsus, and died, A.D. 361. On his death-bed he named Julian his successor. Constantius, though not a good prince, had some valuable qualities.

CONSTANZ, or CONSTANCE (*Bodensee*), the ancient *Lacus Brigantinus*, a large lake in the south-west of Germany, is the common property of Austria, Bavaria, Würtemberg, Baden, and Switzerland. It is 1283 feet above the level of the sea: its greatest length is about 45 miles; its greatest breadth about 13; and its average depth is 320 feet, the greatest being 964. It is divided into Upper Lake and Lower Lake, of which the Upper is by far the most considerable. The Lower Lake is subdivided into the Zellersee, which is about 60 feet deep, contains the island of Reichenau, belonging to Baden; and the Untersee, through which the Rhine flows. The northernmost bight, which contains the island of Meinau, also belonging to Baden, and the island of Lindau, is called Lake Bodmer, or the Ueberlingersee. The Rhine enters the lake at Rheineck, and leaves it at Stein. A great number of other streams empty themselves into Lake Constanz. Owing to its great depth, it is seldom frozen over. It is subject to sudden risings of the waters; in 1770 it rose in one hour from 20 to 24 feet above the ordinary level. There is a considerable traffic on the lake in corn, timber, cattle, wine, fruit, &c. The lake abounds in water-fowl and fish, especially trout of enormous size and sturgeon. Its environs present very picturesque scenery.

CONSTANZ (*Costnitz*), a fortified town, the capital of the Baden Circle of the Lake, stands on the south bank of the Lake of Constanz, at the point where the Rhine leaves it, and has 4500 inhabitants. The most remarkable buildings in the town are—the cathedral; the ancient Dominican monastery, now a cotton factory; the Kauf haus, or mart, once a Carthusian monastery; and the Petershausen, an old convent in the suburb of Petershausen, which is now a palace of the grand-duke. Constanz is the seat of a bishop; of various official departments; and has a lyceum; gymnasium; hospital; and Dominican nunnery for the education of females. A council was held here in 1414, which condemned Huss and Jerome of Prague to the stake. Steamers ply between Constanz and the different ports on the lake.

CONSTELLATION (a putting together of stars), the name of one of those groups of stars into which the whole heavens are divided, and to each of which is imagined to belong the figure of a man, an animal, or some other object, natural or artificial.

The history of the constellations is a matter of mythological antiquity, the most curious features of which are connected with the twelve signs or constellations of the zodiac, or the sun's apparent yearly track. It is sufficient for us here to say, that it is certain we derive our constellations for the most part from the Greeks, and that it is nearly as certain that they derived them from the East, though it is highly probable that they altered the legends to suit their own mythology, and in some instances even the figures. Their firmament, if it confined itself to recording the vast and striking events of their mythic system, as in Argo or Hercules, might bear an external presumption of originality, which it wants altogether while so prominent a constellation as the Great Bear represents nothing but the unimportant and irrelevant story of Callisto. But, while we are just in possession of sufficient knowledge to deny the original formation of the constellations to the Greeks, we have not

enough to say in what nation they were first constructed.

The method of figuring the constellations, though in many instances it gives groups which are striking to the naked eye, is one of the worst which could have been invented for the modern purposes of astronomy. A dragon winding round three quarters of the globe, and a man extending his arms and legs between half a dozen other figures, cannot connect their included stars in any manner which will lead to useful combinations. So that in our modern catalogues, though λ Draconis and ε Draconis are said to be in the same constellation, the connection is purely one of names, and suggests no ideas of relative position. There are even instances in which stars bearing the name of one constellation are situated in another.

We shall proceed to describe the methods by which the stars in a constellation are distinguished. The letters of Bayer are generally adopted for all the stars in his maps. The stars were ranged by him in order of brilliancy, as they appeared to the naked eye about A.D. 1600. The Greek letters were first used, and afterwards the Italic small letters. Thus *α* is the most brilliant star in a constellation according to Bayer, while *p*, *q*, &c. are comparatively faint. Other astronomers have since carried on the lettering of Bayer.

The next step in the arrangement was that of Flamsteed, who retained the old method of describing stars by their situation in the figure of the constellation (as in the leg, in the head, &c.), but placed the stars of each constellation in order of right ascension, or in the order in which they come on the meridian. Succeeding astronomers described each star by the number which it stood from the beginning in the constellation, and called it Flamsteed's number. Thus 7 Draconis means that star of Draco which comes on the meridian the seventh of all the stars observed by Flamsteed in that constellation.

The numbering of Piazzi is on a different and inferior principle. The whole heavens being divided into twenty-four hours of right ascension, the stars are numbered in their respective hours of right ascension. For instance (303), Can. Maj. is, according to Piazzi, a star in Canis Major, not the 303rd of that constellation, but the 303rd of the hour of right ascension in which it fell in the year 1800, counting the first star of the catalogue which passed after the sidereal clock had marked the hour as 1, the second star as 2, &c., and affixing to each the name of the constellation in which it is. If the equinox were fixed, this method would be a good first correction of the vagaries of the constellations; but, as it is, some stars which were in one hour of right ascension when Piazzi formed his catalogue are now in another, such as 12 Cancri, 15 Argus, &c., which were in 1830 on the borders of the 7-8 hour of right ascension.

In most other catalogues, such as those of Bradley, Lacaille, Mayer, Fallows, &c., the stars are usually numbered in their order from the beginning of the catalogue, the order being that of right ascension.

There are many other constellations formed by different individuals which are not now generally admitted. Such are the Antinous of Tycho Brahé; the Mons Mænalus and Cerberus of Hevelius; the Oak of Charles II. and the Cor Caroli of Halley; the Table Mountain and the Nubecula Major and Minor of Lacaille (the latter being not clusters of distinct stars, but large nebulæ); the Reindeer of Lemonnier; the Reaper of Lalande; the Honours of Frederic, the Sceptre of Brandenburgh, Herschel's Telescope, the Balloon, the Mural Quadrant, the Cat, and the Log Line of Bode; and George's Harp of Hell. Many others, we believe, have been proposed, but there would be little use in reviving their names. In fact, half a century ago, no astronomer seemed comfortable in his position till he had ornamented some little cluster of stars of his own picking with a name of his own making.

In the large maps of the stars, published by the Society for the Diffusion of Useful Knowledge, the constellations are figured precisely as described by Ptolemæus, and the additional ones are not drawn, which will therefore render them useful to the readers of Greek astronomical works.

CONSTIPATION, an undue retention or an imperfect evacuation of the fæces.

The immediate effects of constipation, when this disease occurs in its usual degree, in ordinary habits, is the production of some one or more of those painful states, the signs of which are generally grouped together under the common name of *dyspepsia*. There is disordered appetite, which is either deficient, capricious, or voracious; a dry, coated, or clammy tongue; thirst, or some disagreeable taste in the mouth; dulness, heaviness, confusion, giddiness, or pain in the head; physical and mental torpor; dry and hot skin; and last, though not least, an irritable temper, and a capricious or a desponding mind.

The remote effects of constipation are far more numerous and serious than is commonly understood. But among the most obvious may be mentioned, the origin of various diseases of the skin.

Moreover, headache and giddiness existing as severe and permanent affections, and the distinct diseases called colic, chorea, epilepsy, chlorosis, hysteria, hæmorrhoids, and many others, have their most frequent origin in an habitual and protracted retention of the fæces.

The usual termination of constipation when severe, frequent, and obstinate, is in inflammation of the intestines, which commonly assumes the form either of ilius or enteritis, and which rapidly proves fatal.

Some persons are more liable to constipation than others. But this tendency would appear to be capable of being superinduced by the habitual use of certain kinds of indigestible food—such as imperfectly fermented bread, heavy pastry, as dumplings, &c.; indigestible vegetables, as cucumbers, melons, &c. The tendency thus superinduced may be greatly increased by the use of astringent and stimulating beverages, sedentary habits, long indulgence in sleep, &c. The immediate causes of constipation are—1, an impaired or torpid action of the liver, in consequence of which there is either a deficient or a vitiated se-

cretion of bile; 2, torpor of the muscular coat of the alimentary canal itself, and more especially of that portion of it which constitutes the large intestines; 3, the production and accumulation of flatus in these organs, by which their thin parietes are distended, and even a mechanical obstacle is afforded to the passage of the fæces.

The treatment of constipation should always have in view two objects:—1, the immediate removal of the impacted fæces; and 2, the change of the pathological condition of the system in general, or of the alimentary canal in particular, on which the fæcal retention depends.

In effecting the first object only the milder purgatives should be employed; and in general, the more protracted the retention, the less irritating should be the purgative selected to remove it. The various preparations of aloes, senna, and castor oil, combined with a narcotic, as hyoscyamus, to lessen the irritation sometimes excited even by these gentle aperients, are the safest remedies; and fortunately, when judiciously combined, alternated, and repeated, they are generally effectual. In the slighter and more ordinary cases of constipation, from three to five grains of the blue pill, with from five to ten grains of the compound gamboge, or aloetic pills, taken at bed-time, followed by a draught in the morning, consisting of equal quantities (about an ounce) of the compound infusions of senna and gentian, or about the same quantity of the compound decoction of aloes, and these doses repeated about twice a week, are all the medicines required. The remedies most appropriate for the removal of habitual and protracted constipation can be discovered only by the detection of the exact pathological condition on which the retention depends.

CONSTITUTION, a term often used by persons at the present day without any precise notion of what it means. The constitutions which are most frequently mentioned are the English Constitution, the constitutions of the several states composing the North American Union, the Federal Constitution, by which these same states are bound together, and various constitutions of the European continent. At present (1848)—a time of revolutionary change—it is difficult to say what will be the permanent constitution of many European states.

The notion of a constitution is that of certain fundamental rules or laws by which the general form of administration in a given country is regulated, and in opposition to which no other fundamental rules or laws, or any rules or laws, can be made by the legislature.

The words constitutional and unconstitutional appear to be only strictly applicable when the sovereign power is vested in more persons than one, and when certain written rules are laid down to regulate the conduct of those to whom the sovereign power intrusts the legislative functions. Such rules are the constitutions of the several states which compose the North American Union, and such is the constitution of the federation of these several states. In the several states the people are the sovereign. The people, assembled by their delegates named for that especial purpose, have framed the existing constitutions; and they change the same constitutions in the same way whenever the majority of the people, that is, when the sovereign, chooses to make such change.

These constitutions lay down certain rules, according to which the legislative, executive, and judicial functionaries must be chosen; they fix limits to their several powers, both with respect to one another, and with respect to individuals who compose the sovereign. 'They do ordain and declare the future form of government.' For example, the Constitution of Virginia of 1776 declares 'that all ministers of the Gospel of every denomination shall be incapable of being elected members of either House of Assembly, or of the Privy Council.' The same rule, we believe, forms a part of the amended constitution of the same state. If the Virginian legislature were to pass an act to enable clergymen to become members of the House of Assembly or of the Privy Council, such an act would be unconstitutional, and no one would be bound to obey it. The judiciary, if such a matter came before it, would, in the discharge of its duty, declare it unconstitutional, and such so-called law could have no further effect than if any unauthorised body of men had made it.

A constitution then, in its strict sense, is nothing more than an act of the sovereign power, by which it delegates a part of its authority to certain persons, or to a body, to be chosen in a way prescribed by the Act of Constitution, which at the same time fixes in a general way the powers of the body to which a part of the sovereign power is thus delegated. And the sovereign power changes this Constitution whenever it pleases, and in doing so acts neither constitutionally nor unconstitutionally, but simply exercises its sovereign power. No body can act unconstitutionally except a body which has received authority from a higher power, and acts contrary to the terms which fix that authority. Wherever, then, there is sovereign power—consisting either of one, as the Autocrat of Russia; of three members, king, lords, and commons, as in England (provided these three members do possess the complete sovereign power); or of all the males born of American citizens and of a given age, and of all naturalised foreigners, as in most of the United States of North America—such sovereign power cannot act unconstitutionally. For to act unconstitutionally would be to act against a rule imposed by some superior authority, which would be a contradiction.

The precise meaning of what is called the English Constitution must be got from the various writers who have made its origin and progress their study. The English Constitution is not founded on any single written instrument; nor does it rest on any fundamental principles which are unchangeable. The king, lords, and commons can, in theory at least, change it as they please; but yet there are many fundamental notions, which could not at present be changed without offence to the opinions and feelings of a large part of the people. Time, new circumstances, and public opinion contain the elements of change, which are irresistible; but, in order to be beneficial, they must be gradual and slow.

For the nature of a Federal Government, which implies the notion of a Constitution, see FEDERATION.

CONSTITUTIONS, APOSTOLICAL, are a code of regulations, attributed by some ecclesiastical writers to the Apostles, and said to have been collected by Clemens Romanus. The collection consists of eight books, containing a great many precepts and rules concerning the discipline, doctrine, and ceremonies of the church.

The authenticity and date of this work have been a subject of much learned contention; and though by far the greater number of critics have pronounced it to be a pseudonymous compilation, made in the third or fourth century, there have been some who support the opinion of its apostolical origin. [CANON LAW.]

(Bishop Beveridge, *Codex Canonum Eccles. Primitivæ vindicatus et illustratus*; Gerhard, *Hist. Juris Eccles.*, num. 122; Lardner's *Credibility*, vol. iv. p. 320–354; Lenglet, *Tab. Chronol.*, tom. ii. p. 212; Jortin's *Remarks on Eccles. Hist.*, vol. i. p. 223.

CONSTITUTIONS AND CANONS ECCLESIASTICAL. King James I., in the first year of his reign in England, by his writ directed to the Archbishop of Canterbury, summoned and called the 'bishops, deans of cathedral churches, archdeacons, chapters and colleges, and the other clergy of every diocese within the province of Canterbury,' to meet in the Cathedral Church of St. Paul in London, to 'treat, consent, and conclude upon certain difficult and urgent affairs mentioned in the said writ.' The persons so summoned met in convocation, and 'agreed upon certain canons, orders, ordinances, and constitutions, to the end and purpose' by the king 'limited and prescribed unto them;' to which the king, out of his 'princely inclination and royal care for the maintenance of the present estate and government of the Church of England by the laws of this realm now settled and established,' gave his royal assent by letters-patent, according to the form of the statute of the twenty-fifth year of King Henry VIII. The king, by his prerogative royal and supreme authority in causes ecclesiastical, commanded these said canons, orders, and constitutions to be diligently observed, executed, and kept by his loving subjects of the kingdom, both within the provinces of Canterbury and York, in all points wherein they do or may concern every or any of them; and the king also commanded that every minister, by whatever name or title soever he be called, shall in the parish church or chapel where he hath charge read all the said canons, orders, ordinances, and constitutions, once every year, upon some Sundays or holy days, in the afternoon before divine service.

The Constitutions and Canons Ecclesiastical have been printed by the Society for promoting Christian Knowledge, London, 1841, together with the Thirty-Nine Articles of the Church of England.

CONSTITUTIONS, ROMAN. The word *constitutio* (from *constituere*, *i.e.* to set up, to establish) signifies any disposition or appointment. The decrees and decisions of Roman emperors are also called *constitutiones*; and, according to Gaius (i. 5), an imperial constitution is what the emperor declares by a decree, or an edict, or a letter. That modern signification of the term, which denotes the fundamental law of a state, was not in use among the Romans; yet Cicero ('De Republica, i. 45) employs the word to express a similar notion.

The first collections of Imperial constitutions made by private persons were the Codices Gregoriani and Hermogeniani. Opinions vary also as to the time when these compilers lived. The fragments of these codes are in Schulting's 'Jurisprud. Vet. Antejust.,' Lugd. Bat., 1712, and in the 'Jus Civile Antejust.,' Berol., 1815.

Another and more important collection was made under the reign of Theodosius II., by public authority. The emperor having nominated in the year 435 a commission of sixteen persons, for the purpose of collecting the constitutions from the time of Constantine the Great, three years afterwards (A.D. 438), the new code, called Codex Theodosianus, was confirmed by the emperor, and published in the eastern empire. It contains sixteen books, divided into titles. The first five books were lost, but some parts of them have been recently discovered at Milan, by Clossius ('Clossii Theodos. Codic. Genuin. Fragmenta.' Tüb., 1824); and at Turin, by Peyron ('Codic. Theodos. Fragm. Ined.,' Tur., 1823-4). The best edition of the Theodosian Code is that by Jac. Gothofredus, tom. vi., Lugd., 1665, who also wrote an excellent commentary on it, which was published, together with the text, by Ritter, Leipzig, 1736–54.

The last and most important collection of Roman constitutions was made by the order of Justinian. [JUSTINIAN'S LEGISLATION.]

CONSUBSTANTIAL (*Consubstantialis*) is equivalent in expression to co-essential, and is the translation of the term ὁμοούσιος, homoousios, which, in the commencement of the fourth century, was the subject of so much zealous contention among the Trinitarian and Unitarian sects of Christians. The Arians and Eusebians, who asserted the second person of the Trinity, and the adherents of Macedonius, who asserted the third person, to be different and distinct in nature from the first, were strenuously opposed by the Athanasians, who, at the council of Nice (A.D. 325), adopted as the pass-word of their party the term ὁμοούσιος, consubstantial, or, as it is Englished in the Nicene creed, '*Of one substance* with the Father.' The circumstantial particulars of the ancient controversy may be found in the various histories of the councils of that period.

CONSUBSTANTIATION, or IMPANATION, is a term adopted by the Lutheran Church to designate its doctrine of the Eucharist, in contradistinction to the transubstantiation of the Church of Rome. Luther, after separating from the Catholic communion, still retained the doctrine of the real presence; but instead of teaching, as the Romanists do, that the priest's pronunciation of the words of consecration at once deprives the bread and wine on the altar of their natural qualities, and transforms them into the real body and blood of Christ, he taught, that after the consecration of the bread and wine they are mys-

teriously *accompanied* with the real body and blood. In short, in *transubstantiation*, the divine body and blood are present *without* the bread and wine; and in *consubstantiation* they are present *with* the bread and wine: the former effects a change of nature, the latter a change of circumstance.

CONSUEGRA. [Castilla la Nueva.]

CONSUL was the title of the highest ordinary magistrate in the Roman republic. King Tarquinius Superbus having been expelled from Rome, B.C. 509, a republic was established. Instead of kings, two functionaries called consuls were appointed to administer the republic. The first consuls were Lucius Junius Brutus and Lucius Tarquinius Collatinus (or M. Horatius, according to Polybius, iii. 22). The consuls were annually elected in the comitia centuriata, and at first only chosen from the patricians. The consuls during their time of office had the same power as the kings had: they had the executive power of the state, the authority called imperium, and they had jurisdiction, or the supreme administration of the law. They presided in the senate, and the business in the comitia curiata and centuriata was conducted by them. The consuls created the quæstors of the public treasury, and thus had great influence in the administration of the treasury.

The consuls possessed the same external insignia of honour as the kings, except the golden crown and the trabea (purple cloak), which latter they were only allowed to wear in a triumph. In the assemblies of the people they sat on the cella curulis (an ornamented chair). Twelve lictors, with the fasces and axes, as the symbol of the consuls' power, preceded each of them at first; but P. Valerius, called Poplicola, curtailed the external symbols of their authority. In the city, the axes were taken from the fasces, and only one of the consuls was preceded by the twelve lictors. In B.C. 366, after a long struggle between the patricians and plebeians, the first plebeian was elected consul. (Livy, vi. 42; vii. i. 2, 21.) Afterwards both consuls were on several occasions plebeians.

In the meantime, the extension of the state made it impossible for the consuls to perform the increased duties of their office, and new functionaries were created. In B.C. 442 the censors were created, and B.C. 365 the prætors: the prætors exercised the jurisdiction which had formerly been exercised by the consuls.

The imperium, or military command, was granted to the consuls by the lex curiata, whereby a province (provincia) was assigned to them. The term provincia originally denoted the power given to discharge some public duty out of Rome, particularly the command of the army in conquered countries; and these countries themselves were called provinciæ (provinces). When a consul, after the expiration of his term of office, was appointed to govern a province, he was called pro-consul. By a law passed B.C 181, a person was not eligible to the consulship until he was forty-three years of age; but this law was not always observed. The time of election varied at different periods of the Commonwealth; but the consuls were always chosen some time before they entered on office, and were called designati. The time of entrance on office likewise varied; but about B.C. 154 it was fixed that they should always enter on their office on the 1st of January. The years were named after the consuls, and annual registers were kept for that purpose, which were called Fasti Consulares.

Consular Medal of M. Agrippa. Brit. Museum. Actual Size. Bronze.

Consular Medal of M. Agrippa. Reverse.

From the time of Sulla and Cæsar, who were elected perpetual dictators, the consulate gradually lost all its powers, and under the emperors it sunk to a mere name. Yet consuls were still annually elected by the people, until the time of Tiberius, who ordered that they should be chosen by the senate. The number of the consuls was much augmented by the emperors; and several kinds of consuls were made, as consules ordinarii, after whom the years still were called; consules suffecti, elected by the emperors; and consules honorarii, who had title and rank, but no power. The last consul after whom the year was denominated, was Basilius, junior, in the year 1294 A.U.C. or 541 A.D., in the reign of the Emperor Justinianus.

CONSUL. The word Consul, like many other Roman terms, has passed into the languages of Europe, and modern times have witnessed the establishment of a consulate in France; the establishment in name, but in nothing else.

The word Consul has been used in various senses in modern times. The Genoese had consuls in the factories or ports which they established. Richelet ('Dictionnaire') speaks of a consul as a judge at Paris who settled disputes among merchants: his office lasted only a year.

A modern Consul is an officer appointed by a government to reside in some foreign country, in order to give protection to such subjects of the government or citizens of the state by which he

is appointed as may have commercial dealings in the country where the consul resides, and also to keep his government informed concerning any matters relating to trade which may be of advantage for it to know. To these duties are sometimes added others with objects more directly political; but these functions are assigned to consuls, not as such, but in the absence of an ambassador or other political agent.

In most cases consuls are subjects or citizens of the state by which they are appointed; but this is by no means an invariable rule, and they are sometimes the subjects or citizens of the country in which they reside, or of some other country foreign to both. Persons are usually selected for filling the office from among the mercantile class, and it very commonly happens that they are engaged in commercial pursuits at the port where their official residence is fixed. In this respect the English government is chargeable with some inconsistency, for, while in many instances British consuls are permitted to trade, in others they are expressly interdicted from so doing.

There are British Consuls at most of the great trading towns in foreign countries. The total amount paid in salaries to English consuls, &c. and vice-consuls in 1844 was 107,300*l.*; in 1835, 61,950*l.*; in 1825, 71,716*l.*

Under 6 Geo. IV. c. 87, the contingent expenses of the consular establishment in 1844 were 17,000*l.* They consisted of relief to distressed British subjects, expenses for chaplains, churches, burial-grounds, interpreters in the Levant, &c.

The consuls of the United States of North America do not receive salaries, except those for London, Tangier, Tunis, Tripoli, 2000 dollars each, and the consul for Beirout 500 dollars.

CONSUMPTION, PULMONARY. [PHTHISIS.]

CONTAGION, THE MATTER OF, a poison which, on entering the blood, produces a definite train of morbid phenomena, and which communicates to the blood the property of generating a similar poison capable of producing precisely similar morbid phenomena.

According to the etymological signification of the term, the propagation of disease from person to person by contagion depends on the actual contact of the body which receives with that which communicates the poison. But direct contact is not indispensable to the propagation of a contagious disease. There are contagious diseases which are absolutely incommunicable without direct contact; but there are others which are capable of communication both by contact and without it. A particle of the matter of small-pox, for example, placed in direct contact with the body, will produce small-pox; but the matter of small-pox is likewise capable of being dissolved or suspended in the air; and the air thus loaded with small-pox matter, on coming in contact with the body, is capable of producing small-pox. Hence contagious diseases are divided into two great classes; into those in which the contagious matter acts only by positive contact of person with person, and those in which it acts both by positive contact and through the medium of the air.

CONTARINI, an illustrious family of Venice, which has given to that republic many senators, doges, and statesmen. The most eminent was Andrea Contarini, who in 1380, being then eighty years of age, led the Venetian fleet against the enemy, defeated the Genoese, and saved the republic. Ambrogio Contarini was sent, in 1473, as ambassador to Hussum Hassan Bey, sovereign or usurper of Persia, to contract an offensive alliance against the Ottomans. He returned to Venice in 1477, and published the journal of his mission, which is curious, and written with much apparent regard to truth, 'Itinerario nell' Anno 1473, ad Usum Cassan Ré di Persia,' 4to., Venezia, 1524. There have been also several men of learning of the family of Contarini; one was Cardinal Gaspare Contarini, in the 16th century, who wrote many philosophical and theological works; and also a treatise, 'De Magistratibus et Republica Venetorum.' His works were collected and published together at Paris, folio, 1571.

CONTEMPT. A contempt in a court of law is a disobedience of the rules, orders, or process of the court, or a disturbance or interruption of its proceedings. Contempts by resistance to the process of a court, such as the refusal of a sheriff to return a writ, are punishable by attachment; but contempts done in the presence of the court, which cause an obstruction to its proceedings in administering the law, may be punished by the commitment of the offender to prison or by fining him. The power of enforcing their process, and of vindicating their authority against open obstruction or defiance, is incident to all superior courts.

If a defendant in Chancery, after being served with a subpœna, does not appear within the time fixed by the rules of the court, and plead, answer, or demur to the bill, he is in contempt, and he is liable to various processes in succession according to the continuance of his disobedience.

CONTENT (*contentus*, contained), the quantity of space contained in any portion of space, measured by the number of times which some arbitrary unit is contained in the space. Thus, linear content is simply *Length;* superficial content is *Area* or surface; solid content (in which sense the word is principally used) also called *Volume*, is the number of solid units contained in a space. These solid units are always cubes, described in the unit of length. Thus, when the inch or foot is employed in measuring lengths, the cubic inch or cubic foot is always employed as the measure of solid content.

The solid content of a parallelopiped (or figure like a box) is found by multiplying together the units in the lengths of its three dimensions. Thus, 3 feet of length, 2½ feet of breadth, and 4 feet of height, give $3 \times 2\frac{1}{2} \times 4$, or 30 cubic feet.

The solid content of any cylinder or prism is found by multiplying together the number of square units in the base and the number of linear units in the altitude; and one-third of a similar product is the content of a pyramid or a cone. The content of any irregular solid bounded by planes must be found by dividing it into pyramids.

Weight is thus connected with content accurately enough for common purposes. Multiply the number of cubic *feet* by 1000 times the specific gravity; the result is the number of ounces avoirdupois. Roughly, multiply the number of cubic feet by the specific gravity, and five-ninths of the result is the number of cwts. Thus, the specific gravity of brick being 2, a cube of bricks 20 feet long every way weighs $\frac{2}{3}$ of $20 \times 20 \times 20 \times 2$, or 8889 cwt.

To find the solid content of a sphere, take $\frac{377}{300}$ths of the radius × rad. × rad. Thus, the radius of a sphere being 4 feet, the number of cubic feet contained is $4 \times 4 \times 4 \times 377 \div 90$, or 268.1.

CONTINGENT REMAINDER. [REMAINDER.]

CONTINUED BASE, in Music, is the figured base of a score used throughout, and so called to distinguish it from the vocal base, as well as from the base staves assigned to particular instruments. The term, used in old music, has become obsolete.

CONTRABAND, from the Italian *Contrabando*, 'against the proclamation,' a term commonly used in commercial language to denote articles the importation or exportation of which is prohibited by law. Since the adoption of the warehousing system in Great Britain, the list of goods, the importation of which is prohibited, has been made exceedingly short.

Under the Customs' Act, 3 and 4 Wm. IV. c. 56, cattle, sheep, fresh beef and pork, or slightly salted, and fish, were contraband; but, under the tariff established by 5 and 6 Vict. c. 47, they have ceased to be contraband. Tools, utensils, and machinery were also contraband, but the 6 and 7 Vict. c. 84, repeals, with some exceptions, the prohibition against machinery.

CONTRACT is the Latin *Contractus*. The general term for any consent of two or more persons in one thing is *Agreement*. In its widest sense Agreement is not a technical term, and all agreements are not legal Agreements. People may agree about many things without intending thereby to create any legal obligation; for instance, persons may agree to take a journey together or to form a party of pleasure.

Those agreements which are intended to produce legal obligations, and are adapted to produce such obligations, are contracts. All contracts are agreements, but all agreements are not contracts. A contract always produces a legal obligation either on one side or on both; but obligations may also arise in other ways than by contract. The general nature of obligations and contracts is properly explained under the head of OBLIGATIONS.

When the word Agreement has a technical sense in the English law; it signifies a 'mutual contract, on consideration, between two or more parties' (Wain v. Warlters, 5 East, 10). This subject is further explained under OBLIGATIONS.

CONTRACTION, in Surgery, an abnormal and permanent alteration in the relative position and forms of parts, arising from various causes. The recent mode of treating these contractions by surgical operation has been remarkably successful. Only the principal forms of such contractions can be mentioned.

Club-Foot, *Talipes*, is the term which has been applied to all kinds of distortion of the foot. Four species have been described — *Talipes varus*, distortion of the foot inwards; *Talipes valgus*, eversion of the foot; *Talipes equinus*, forced extension; and *Talipes calcaneus* or *talus*, extreme flexion of the foot upon the leg. Till within a recent period it was a generally received opinion that all forms of club-foot consisted in a mal-formation of the bones of the tarsus; but it is now known that the following are the principal causes of the distortion, and that the bones are little or not at all diseased.

1. Structural changes in the muscles, inflammation and wounds, with loss of substance.

2. Debility and inactivity of antagonists, produced either by wounds of tendons or the bellies of antagonist muscles, or by paralysis of the nerves of antagonist muscles.

3. Diminution of voluntary power in the entire limb, through which the flexors or extensors preponderate over the extensors or flexors by the constant organic contraction of the muscles.

4. Painful affections of the part, restraining or prohibiting motion, such as that from inflammation of a joint.

5. Increased energy in the muscle, morbid contraction or motion in the muscular fibres, tonic spasm.

The various modes of treatment of club-foot formerly pursued indicated the want of a definite knowledge of its nature. They were mostly mechanical, and seldom effected the object they had in view. The mode of treatment now more generally pursued is the use of mechanical means after the performance of a surgical operation. The operation consists in dividing the tendons of the contracted muscle, which admits of the restoration of the malformed parts to their normal position, and the space between the divided ends of the tendon is filled up with new matter, and the function of the muscle is normally performed. The principal part of the treatment takes place after the operation, and consists of applying various mechanical means for the restoration of the part to their normal position.

Club-Hand does not occur so frequently as club-foot, but the distortion is of precisely the same nature, and requires for its removal the application of the same measures.

Wry-Neck (*Caput obstipum, Torti-Collis*) is a disease of the same nature as the preceding, and most frequently arises from the unequal contraction of the muscles of the neck, originating in some one of the causes previously mentioned.

(Little, *On Ankylosis;* Little, *On Club-Foot;* Cooper's *Surgical Dictionary;* Cooper, *First Lines of Surgery;* Articles 'Ankylosis' and 'Club-Foot,' *Cyclopædia of Surgery.*)

CONTRARY and CONTRADICTORY. Two propositions are contrary when the one denies every possible case of the other: they are contradictory, when, one being universal, the other denies some only of the things asserted in the first. Thus the contrary proposition to 'every A is B' is 'no A is B,' and its contradictory is 'some As are not Bs.'

Contrary propositions may be both false, but cannot be both true; as in 'all angles are equal,' and 'no angles are equal.' But of contradictory propositions one must be true and one must be false; either 'all angles are equal,' or 'some angles are not equal.' One of the most common fallacies of conversation and debate (and occasionally of written argument) is fixing the assertion of the contrary upon one who simply contradicts. And, on the other hand, nothing is more common than to assume a contrary as proved upon grounds which establish only the contradictory.

The most easy way of establishing general propositions is, in many cases, the refutation of the contradictory; and here is another source of error, since the refutation of the contrary is frequently supposed to have the same effect.

CONUS, a genus of gasteropodous Mollusks, founded by Linnæus, and multitudinous in species.

Animal elongated, very compressed, with a distinct head, terminated by a proboscis capable of much extension. Mouth, with a tongue rather short, but projecting, and armed with two rows of sharp teeth. Tentacula cylindrical, with the eyes near the summit. Foot oval, elongated, widest anteriorly, and with a transverse anterior channel. Mantle scanty.

Shell, thick, solid, rolled up as it were in a conical form; epidermis membranous, sometimes very thick; spires of different degrees of elevation, sometimes almost flat; aperture long and very narrow, widening a little anteriorly; lips generally straight and parallel; the outer lip simple and sharp-edged, sometimes a little curved; the inner lip without any plaits on the columella, but with a few elevated striæ on its anterior termination; operculum horny, very small, subspiral, with a terminal summit placed obliquely on the back part of the foot, and when compared with the length of the aperture appearing like a rudiment.

Habits, carnivorous. Found on sandy mud at depths varying from near the surface of the sea to 17 fathoms.—Locality, southern and tropical seas. In the Mediterranean there are a few species, but none have been detected in the northern seas. Many of the species are very beautiful.

Examples.—*Conus bandanus, Conus generalis, C. imperialis, C. textilis, C. geographus.*—Fossil cones are not unfrequent, occurring in the newer tertiary strata. Deshayes enumerates 49, one of which, *C. mediterraneus*, he gives as both living and fossil. Among the fossil species from the western borders of the Red Sea collected by Mr. James Burton, named by Mr. Gray and Mr. Frembley, and communicated to Mr. Lyell by Mr. Greenough, are 12 species all living, but distinct from *C. mediterraneus.*

(G. B. Sowerby's *Genera of Recent and Fossil Shells; Zoological Proceedings*, vols. iv. v.)

CONVENT, from the Latin *conventus*, an assembly or meeting together. This word is used in a double sense—first, for any corporation or community of religious persons, whether monks or nuns; and secondly, for the house, abbey, monastery, or nunnery, in which such monks or nuns dwell.

CONVENTION, MILITARY, a treaty made between the commanders of two opposing armies concerning the terms on which a temporary cessation of hostilities shall take place between them. It is usually solicited by that general who has suffered a defeat, when his retreat is not secure and small chance is left of maintaining his position; and it is seldom refused by the victor, since, without incurring the unavoidable loss attending an action, his force becomes immediately disposable for other operations.

The last convention of this nature in which Great Britain has been concerned was that which took place in Portugal in 1808, when, the Duke of Abrantes having been defeated at Vimeira, the French troops, on condition of the fortresses which had not capitulated being given up, were allowed to retire to France taking with them their guns, horses, and other property, public and private.

This is the celebrated convention which was made at Lisbon, and is generally but improperly called the Convention of Cintra. It excited much dissatisfaction both in Portugal and England, as the cupidity of the French induced them to appropriate to themselves property to which they had no claim. (Napier, vol. i.) By the appointment of a committee consisting of one individual of each of the three nations, all causes of complaint were, however, finally removed.

CONVENTION TREATIES. These are treaties entered into between different states, under which they each bind themselves to observe certain stipulations contained in the treaty. In 1843 two acts were passed (6 & 7 Vict. c. 75 and c. 76) for giving effect to conventions between her Majesty and the King of the French, and the United States of North America, for the apprehension of certain offenders.

The act relating to France (c. 75) legalises the convention entered into with the government of that country for the giving up of offenders who may escape from France into England accused of having committed the crimes of murder (as defined by the French Code), attempt at murder, forgery, or fraudulent bankruptcy.

The act relating to America (c. 76) is similar in its nature and purposes to the one relating to France; but the crimes specified include, in addition, piracy, arson, and robbery, and do not include fraudulent bankruptcy. In all such treaties an act of parliament is required to give the necessary powers of arrest to the proper officers, and of detention and committal to prison to magistrates and justices, and the forms of procedure are also prescribed by the act.

CONVERGENT, CONVERGENCY; DIVERGENT, DIVERGENCY. When a series of numbers, proceeding without end, has terms which diminish in such a manner that no number whatsoever of them added together will be as great as a certain given number, the series is called convergent. But, when such a number can be added together as will surpass any given number, however great, the series is called divergent. Thus of the two following series:—

$1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+$, &c., and $1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+$ &c.,

the first is convergent, for no number of its terms, however great, will amount to 2: the second is divergent, and the sum of its terms may be made to exceed any number. By going a mile, then half a mile, then a quarter of a mile, &c., two miles could never be completed: but by going a mile, then half a mile, then one third of mile, &c., a hundred million of miles, or any greater number, could be surpassed.

CONVERSE, in Logic and Mathematics, means a proposition which is formed from another by interchanging the subject and predicate; thus, the converse of 'Every A is B' is 'Every B is A.' But care must be taken to put the proposition in its simplest logical form before conversion. Thus the converse of 'Every A has a B' is not 'Every B has an A.' For the proposition first stated is

Every [A *subject*] [is *copula*] [a thing which has a B *predicate*.]

and the converse is 'Every thing which has a B is an A.'

Of the four forms to which all assertions can be reduced namely (A) 'Every A is B;' (E) 'no A is B;' (I) 'some As are Bs;' (O) 'some As are not Bs,' the logical converses (so called) are those in which the new subject appears with the same degree of generality of assertion as the old one. Thus the converse of 'Every A is B' is '*Every* B is A.' Consequently in the first and fourth forms, or the general affirmative and the particular negative, the logical converse is not necessarily true. Thus 'Every A is B' does not give 'Every B is A' *necessarily*, but only 'some Bs are As.' The latter is called by writers on logic *conversion per accidens*, a term which, as Dr. Wallis has declined to explain it, we shall leave as we find it, adopting the phrase diminished or limited conversion, and calling the first kind simple conversion. The only other method of conversion which has a definite name is that in which the subject and predicate are made contradictory to the former ones, as when we convert the proposition, 'All equilateral triangles are equiangular triangles,' into 'All triangles not equiangular are triangles not equilateral.' This is called conversion by contra-position. Restricting ourselves to converses which are necessarily as true as the direct propositions, we have the following rules with respect to A, E, I, and O above.

E and I are simply convertible.

E and A are convertible by diminution.

A and O are convertible by contra-position.

CONVERSANO. [Bari, Terra di.]

CONVERSION. [Trover.]

CONVEX. [Conoave.]

CONVEYANCE. This term appears to be limited to signify a deed or instrument in writing, which transfers real or personal property. Conveyances of real property operate either according to the rules of the common law, or under the Statute of Uses. Conveyances may be also divided into those made by matter of record and by deed. Examples of those made by matter of record are private acts of parliament, and the king's grant; and, until those modes were abolished by the 3 & 4 Will. IV. c. 47, fine and recovery. Those by deed are by feoffment, grant, bargain and sale, covenant to stand seised, lease, release, confirmation, exchange, surrender. Conveyances which simply transfer personal property are called assignments.

CONVEYANCING is the business of preparing conveyances of real and personal property, of investigating the title of the vendors and purchasers of property, of making wills and testaments, settlements of property, and of framing the various instruments which are necessary in the multifarious legal transactions of social life. It is carried on by barristers, or by members of the Inns of Court, who, having kept twelve terms, obtain a certificate according to the provisions of the 9 Geo. IV. c. 49, and are called Certificated Conveyancers.

CONVICTION. [Justices of the Peace.]

CONVOCATION, the assembly of the Clergy of England and Wales, under the authority of the king's writ, which takes place at the commencement of every new parliament. The convocation writs issue from the Crown Office, and are addressed to the two primates of Canterbury and York. There is a convocation for the province of Canterbury, and another for the province of York. The Convocation of Canterbury consisted of an Upper House of bishops and archbishops, and of a Lower House of deans, archdeacons, and proctors of the clergy. In the Convocation of York, all the members composed (at present at least they compose) only one house.

It is supposed that originally the clergy were called together by the king's authority for the purpose of assessing themselves in levies of taxes at a time when they contended for exemption from the general taxation of the country imposed by the authority of parliament. It is said that the convocation which was summoned in 1295, in the reign of King Edward the First, was for the purpose of obtaining a supply of money from the clergy by means of their representatives. Edward had taxed the clergy very heavily in 1294, and, instead of repeating the experiment, he thought it better to get some money out of them with their own consent.

From this time to the year 1663, the clergy were taxed in convocation in respect of their benefices and lands; and the grants of subsidies by the clergy in convocation required no confirmation except the assent of the king, who wanted the money. From the time of Henry VIII. the grants were always confirmed by act of parliament. Thus it appears that the origin of the convocation was like the origin of the House of Commons: the first object of the convocation was to grant money. The convocations of Canterbury and York were quite independent of one another, and they did not always grant the same or a proportionate amount. In the twenty-second year of Henry VIII. the convocation of Canterbury granted the king 100,000*l.*, in consideration of which an act of parliament was passed which gave the clergy a free pardon for all spiritual offences, with a proviso that the pardon should not extend to the province of York, unless the clergy would show themselves equally liberal.

When such an assembly was called together

under the direct authority of the crown, it was natural that ecclesiastical subjects should be introduced, discussed, and in some instances determined by it. But the convocation had only authority in spiritual matters. The crown however had always in its hands the power of controlling this assembly, by possessing the prerogative of proroguing and dissolving. But at the Reformation an act was passed (25 Henry VIII. c. 19), which deprived the convocation of the power of performing any act whatever without the king's licence.

By an act passed in 1665 (16 & 17 Chas. II. c. 1), the clergy were bound by the act, which was for the raising of a tax, just like the laity, and they were discharged from the payment of the subsidies hitherto granted in convocation. Though this act reserves to the clergy the right of taxing themselves in convocation if they think fit, it has never been attempted, and the clergy and the laity are now precisely on the same footing as to taxation. The clergy, instead of being represented by the lower house of convocation, are now represented in parliament in the House of Commons, not however as an ecclesiastical body, but simply as citizens. No business beyond matters of form has been done in convocation since 1741.

Though the convocation has become a nullity, the practice has been continued, and continues to the present day, of summoning the clergy to meet in convocation whenever a new parliament is called. The forms of election are gone through in the dioceses, and the meeting for the province of Canterbury is held, usually in St. Paul's Church, when the form is also gone through of electing a prolocutor or speaker. It is the practice for the king to prorogue the meeting when it is about to proceed to any business.

There is no convocation for Ireland.

The history of the English convocation may be collected from Gibson's 'Codex,' and Atterbury's 'Rights, Powers, and Privileges of the English Convocation stated and vindicated,' London, 1700; and from a 'Charge, delivered at a visitation of the Archdeaconry of Oxford, 1841, by Archdeacon Clarke.'

The difficulties which beset every attempt to restore the convocation, or to set it to work again, are fully stated in an article in the 'Quarterly Review,' No. 150. This article makes us acquainted with the strange fact, that a parliamentary writ issues from the Petty-Bag Office, concurrently with the convocation writs from the Crown Office.

CONVOLVULA'CEÆ, a natural order of monopetalous Exogens, with bell-shaped flowers. The species have purgative roots, and in the case of Scammony, yielded by *Convolvulus scammonia*, and of Jalap, produced by various species of *Ipomœa*, are of great medicinal importance.

CONVO'LVULUS, the genus of plants upon which the natural order *Convolvulaceæ* is founded. Many of the species are exceedingly beautiful: even *C. arvensis*, the common Bind-Weed, would be prized as a lovely flower, it it were not so common, and such a troublesome plant to eradicate on account of its creeping roots. *C. althæoides*, *C. italicus*, and *C. scammonia* are the three prettiest of the hardy exotic species of the genus.

CONVO'LVULUS JALAPPA and C. SCAMMONIA. The resins of the *Convolvulaceæ*, upon which these and other species depend for their activity as medicines, appear to be of two distinct kinds; the one soluble in proof spirit and insoluble in æther, the other soluble both in alcohol and æther. Jalap is chiefly shipped from Vera Cruz, and takes its name from the town of Xalapa, or Jalapa, in the interior. The large root, which often weighs 50 pounds, is divided into portions, which are hung in nets over a fire, and dried in ten or twelve days. It occurs in commerce in irregular round or pear-shaped masses, which, when good, are dry, hard, with a brown shining fracture, resinous, not light, somewhat tough. It is often adulterated with portions of the root of white bryony, which however are white, or when old, gray, not heavy, very brittle, fracture not resinous, spongy, without smell, but with a very bitter taste. Dried pears are also often substituted for it; but they may be detected by being laid open, when the core will be seen, containing the seeds.

Jalap is ranged with the drastic purgatives, and, where one of a resinous kind is desired, is that usually selected. Its action is generally certain, and in combination with other substances mild and speedy. It does not seem greatly to influence the nerves of the abdomen, but rather the vascular system of the pelvis and lymphatic system of the intestines.

Scammony is of the same nature as jalap, but, being the inspissated juice obtained by making incisions into the living root, it consists of a much larger proportion of resin, without any woody fibre. It is therefore much more powerful, and the dose requires much less than that of jalap. Scammony is used in nearly the same cases as jalap, and the smaller bulk of the dose renders it in many instances preferable: it often sits better on the stomach. No medicine surpasses it in clearing away the mucous accumulations in the bowels of children, which harbour, if they do not generate, worms. It should not however be too frequently repeated, as its power in this respect renders it a source of danger, by abrading the inner coat of the intestines of its necessary mucous covering, and thereby causing it to become inflamed. [CATHARTICS.]

CONVOY, in the military service, is a detachment of troops appointed to guard supplies of money, ammunition, provisions, &c., while being conveyed to a distant town or to any army in the field, through a country in which such supplies might be carried off by the peasantry or by parties of the enemy. In the navy, the name is applied to one or more ships of war which are ordered to protect a fleet of merchant vessels on their voyage.

CONVULSIONS are irregular and violent contractions of muscular fibres, with alternate relaxations.

Convulsions differ, first, in kind, as dependent on an excess or a deficiency of vital energy; secondly, in degree, varying from the most powerful,

violent; and persistent contractions, without perceptible relaxations, or with relaxations of very short duration, down to the feeblest contractions, with the most rapid alternate relaxations of the slightest tremor; thirdly, in their seat, affecting either the voluntary or the involuntary muscles, or both simultaneously or in succession; fourthly, in their cause, arising from a primary affection of the nervous system, or from irritation propagated to the nervous system from some other part (primary or secondary); fifthly, in their extent, affecting one part separately, or nearly the whole frame simultaneously (local or general); and sixthly, in their character (simple or specific)—simple, when unattended with phenomena which give them a determinate type, that is, when the phenomena consist merely of convulsive or spasmodic action; specific, when the convulsive actions pursue a regular and determinate course, and when moreover some particular phenomenon is superadded to the series constituting a distinct form or type of disease. In this latter case the disease receives a generic name. The term epilepsy, for example, is given to the disease when the convulsions come on in a peculiar mode, and pursue a determinate course, and when there is present the superadded phenomenon of insensibility or sopor. On the other hand, in the affection called hysteria, the convulsions come on in a different mode, pursue a different course, and are attended with a different but still a determinate train of morbid phenomena. In these cases convulsions forming the species of disease, the series of determinate morbid phenomena constitute so many different genera under it.

Voluntary muscles are far more frequently the seat of convulsions, properly so called, than the involuntary muscles.

The muscles of the eyelids, the muscles that move the ball of the eye, the muscular fibres of the iris, the muscles of the face, and more especially of the lips, the muscles of the tongue, the muscles of the pharynx, the muscles of the jaws, and particularly of the lower jaw, the muscles of the neck, the muscles of the chest, back, and abdomen, and the muscles of the upper and lower extremities, may be severally attacked, singly or in combination, simultaneously or in succession, with every degree of convulsion, from the most violent tonic contractions to the slightest clonic tremors or twitching.

When convulsions attack a single muscle, or a particular set of muscles, the convulsions are called partial or local; when they attack a great number of muscles simultaneously or in rapid succession, they are called general.

The duration of a paroxysm of convulsions varies from a few minutes to as many hours. The moment the convulsions subside, the patient commonly falls into a long and profound sleep, from which he awakes suddenly, altogether unconscious of what has happened. The attack is generally succeeded by languor, lassitude, sickness, and a disordered state of the stomach.

The paroxysm commonly returns at uncertain intervals, preceded by the premonitory symptoms just enumerated. But sometimes it proves fatal at the very first attack, by producing apoplexy or asphyxia; and not unfrequently it leaves behind it either paralysis or some definite and permanent form of convulsive disease, as epilepsy, chorea, and so on. The frequent recurrence of the fits invariably impairs and sometimes wholly destroys the mental faculties.

In some cases persons fall into a state in which the functions of animal life are completely suspended, and the actions of organic life appear to have ceased, but the latter are not wholly extinguished, though performed so feebly as to afford no indication of their existence; and consequently, to all outward appearance, the patient is dead. It is in cases of this kind that there is a real danger of premature interment. Several cases are on record in which this event is stated to have actually happened, and the evidence on which the truth of some of these narratives rests it is difficult to resist. At all events it is quite certain that several persons who had fallen into a state of syncope, after the exhaustion of convulsions, have narrowly escaped being buried alive; and such cases should make the medical attendant persevere in the most careful examination of every instance of apparent death, after a convulsive paroxysm, until he has observed the most unequivocal evidence that death is real.

The causes of convulsions are exceedingly numerous and varied. There is, without doubt, a constitutional predisposition to such affections. They occur far more frequently in the nervous temperament than in any other. The distinctive character of the nervous temperament is muscular mobility combined with nervous irritability. The muscular fibre is relaxed, delicate, and weak; the nervous fibre is peculiarly sensitive, while it is proportionally without energy. Other powerful causes are, peculiar conformation of the body, namely, a feeble frame, with a largely developed head; a relaxed and delicate fibre; a full and plethoric habit; a constitution often manifestly propagated from parent to child; all circumstances capable of producing over-excitement, or in any other mode of inducing debility, physical or mental, as an idle and luxurious mode of life; too much indulgence in sleep; neglect of regular and active exercise; and, as would appear, certain electrical conditions of the air, by which the nervous system is rendered more susceptible of impressions, and its vital energy is more rapidly exhausted.

The treatment in every case of convulsion must be directed to the subduing of the paroxysm and to the prevention of its return. There are certain things proper to be done, the instant a person is seized with a fit of convulsions, with a knowledge of which it is desirable that every one should be familiar. The patient should be immediately surrounded as completely as possible with fresh cool air. If he be seized in a small heated and crowded room, circumstances of themselves sufficient to produce a paroxysm in a person strongly predisposed to it, he should be removed into a spacious apartment, the windows of which should be thrown open, and every one whose assistance is not absolutely required should be excluded from

the room. In the male, the neckcloth should be immediately untied, and the face, neck, and bosom freely exposed to the air; in the female, the stays should be unlaced, and every thing tight about the body should be removed. If the skin be cool, and the face pallid and sunk, the patient should be placed in the horizontal posture; if the skin be hot and the face flushed, he should be sustained in the sitting or the erect posture, in order, in the former case, to favour the flow of blood to the spinal chord and brain; and, in the latter, to retard it.

The remedies employed to put an end to the fit must of course depend on the nature of the exciting cause, and on the pathological condition of the nervous system. Convulsions may come on in opposite states of the system, and of course opposite modes of treatment will need to be employed according to circumstances.

CONWAY, or CONWY. [CAERNARVONSHIRE.]

CONY'ZA, a genus of plants belonging to the natural order *Compositæ*. The species are herbs and shrubs, and are found in Europe, Asia, Africa, and America.

C. squamosa, Flea-Bane, Ploughman's Spikenard, is a common plant on calcareous soils in Great Britain and throughout Europe. It possesses a volatile oil with a peculiar scent, and is used for the purpose of driving away fleas and gnats. *C. anthelmintica* is a common plant among rubbish and in dry uncultivated ground in the East Indies. The fruit is used by the doctors of India as a powerful remedy for worms. *C. genistelloides* is a native of Peru and Brazil. It contains a bitter extractive matter, and an aromatic oil, and is not unlike in its medicinal characters the common wormwood. It is employed in the Brazils in intermittent fevers, and may be used in all those cases where the Artemisia is indicated. It is particularly beneficial in the chronic diseases of horses, which are very fond of this plant. It may be employed in the form of an extract or decoction. *C. Marylandica* secretes a powerful volatile oil, which gives out the odour of camphor. This property is also possessed by *C. camphorata*.

COOK, CAPTAIN JAMES, was the son of a farm-bailiff, resident at Marton, in Yorkshire, 6 miles from Stockton-upon-Tees, and was born October 27, 1728. At an early age he was apprenticed to a haberdasher, but he soon procured a discharge from his master, and apprenticed himself to a firm engaged in the coal trade at Whitby. In this service he rose to be mate, but in 1755 he volunteered into the royal navy, in which he was soon distinguished as a skilful and trustworthy seaman. By his merit, and the friendship of Sir H. Palliser, under whom he served, he was made a master in 1759, and in that capacity was at the capture of Quebec by Wolfe, when he took soundings, and laid down a chart of the St. Lawrence from Quebec to the sea.

In 1763 he went out to survey the Newfoundland islands; and in 1764, on the appointment of Sir Hugh Palliser to be Governor, Cook was appointed Marine Surveyor of Newfoundland and Labrador. The fruit of his labours, during the four years in which he held that office, was embodied in his valuable charts of those countries.

The credit which he acquired in the discharge of his functions at Newfoundland was the cause of his selection, in 1767, as a fit person to conduct a voyage undertaken into the South Pacific Ocean. On this occasion Mr. Cook was promoted to the rank of lieutenant. [For the objects of this undertaking, see BANKS, SIR JOSEPH.] On June 12, 1771, the Endeavour anchored in the Downs.

Shortly after his return Cook was promoted to the rank of Commander. His journal and the papers of Mr. Banks were intrusted to Dr. Hawkesworth, who, from these documents and the materials of Captains Byron, Wallis, and Carteret, published an account of the several voyages of discovery undertaken during the reign of George III. into the Pacific, illustrated with plates and charts at the expense of government.

It was now determined to send out a second expedition under Cook to explore the higher latitudes, and the Resolution, of 460 tons, and a smaller ship, the Adventure, Captain Furneaux, were commissioned for this purpose. The two ships sailed from Plymouth, July 13, 1772, quitted the Cape of Good Hope Nov. 22, and traversed the Southern Ocean in high latitudes until the beginning of 1774. Having encompassed the globe in a high latitude, and satisfied himself that no land of considerable magnitude could exist between the 50th and 70th parallels, he thought it inexpedient to prosecute his discoveries in those tempestuous seas with a worn ship and nearly exhausted provisions. Accordingly he made sail for the Cape, which he reached March 22, 1774, having sailed no less than 20,000 leagues since he left it, without meeting even with so trifling an accident as the loss of a mast or yard; and on July 30 he anchored at Spithead.

He was immediately raised to the rank of Post Captain, and received a more substantial reward for his services in being appointed a Captain of Greenwich Hospital. Men of science were powerfully interested, not only by his geographical discoveries, but by his unprecedented success during this voyage in preserving the health of his ship's company, of whom he lost only four, and only one of these by any sickness. On the day of Cook's admission to the Royal Society, March 7, 1775, a paper of his was read, giving an account of the system which he had adopted for preserving the health of his crew. April 18, he communicated a second paper, relative to the tides in the South Seas; both are printed in the 'Philosophical Transactions,' vol. lxvi. Of this second voyage he published his own Journal, illustrated by maps and engravings. A supplementary volume containing the astronomical observations was published at the expense of the Commissioners of Longitude. The style is unpretending, clear, and manly, and, considering the imperfection of his education, does credit to his sense and ability.

While Cook was exploring the Southern Ocean, the attention of government was also turned towards discoveries in the Arctic regions. [NORTH-WEST PASSAGE.] It was not thought fair, after

so many years of labour and anxiety, to request him immediately to forego his honourable ease; but, when he volunteered his services, they were gladly accepted. Two ships, the Resolution and Discovery, were fitted out with every thing that could promote the health and comfort of the crews and the scientific objects of the voyage. They sailed from Plymouth July 12, 1776. In this voyage he reached the latitude of 70° 41′ N., but he failed in discovering the north-east passage. He however discovered Mowee and Owhyhee, the largest islands of the Sandwich group; and, on his calling at Owhyhee on his return, he was killed in an accidental quarrel with the natives, on Feb. 14, 1779. Captain Clerke of the Discovery succeeded to the chief command, and returned in the following summer to the Polar Sea; but he was unable to advance as far as in the former year. The ships returned by China and the Cape to England, which they reached in October 1780. An account of the voyage was published from Cook's Journal continued by Lieutenant King. Charts and plates were executed at the expense of government, and one-half of the profits of the work were bestowed upon Cook's widow and children, upon whom a pension was settled.

(Kippis's *Life of Cook*, in the *Biographia Britannica*; the several voyages to the Pacific Ocean; Samwell's *Narrative of the Death of Captain Cook*, in the *Biographia*.)

COOKE, BENJAMIN, a highly distinguished composer and organist, was the son of Benjamin Cooke, a music-publisher in New Street, Covent Garden, London. Before he had attained his ninth year he became the pupil of Dr. Pepusch, under whom he made such progress, that when only twelve years of age he was found to be capable of doing the duty of organist at Westminster Abbey, as deputy of Mr. Robinson, son-in-law and successor to Dr. Croft. On the death of Pepusch in 1752, Cooke was chosen as conductor of the Academy of Ancient Music, which office he held till the year 1789, when he relinquished it to Dr. Arnold. In 1757 he succeeded Bernard Gates as lay-clerk and master of the choristers at Westminster Abbey, and in 1762 was appointed organist of that venerable cathedral. In 1777 the University of Cambridge conferred on him the degree of Doctor in Music. In 1782, after a severe contest, in which Dr. Burney was his chief opponent, he was elected organist of St. Martin-in-the-Fields. He died in 1793, leaving two sons.

Dr. Cooke's compositions were chiefly for the Academy of Ancient Music, the Church, and the Catch Club. For the first he made the important additions, so well known to connoisseurs, to Galliard's Morning Hymn. For the second he wrote a charming service and two lovely anthems. To the Catch Club he contributed his fine glees, 'In the merry month of May,' 'How sleep the Brave,' 'Hark! the Lark,' 'As now the Shades of Eve,' &c.

COOKE, GEORGE FREDERICK, a popular actor, was born in the city of Westminster, April 17th, 1755. At the usual age he was apprenticed to a printer; but, having imbibed a strong passion for the stage, he appeared, after various essays in private and in the country, at the Haymarket theatre, London, in 1778, without attracting any particular attention. After a period of two-and-twenty years, during which he became the hero of the Dublin stage, he returned to London, and made his first appearance at Covent Garden theatre, Oct. 31, 1800, in the character of Richard III.: his success was decided; and for ten years he divided the favour of the town with John Kemble. In 1810 he sailed for America, and arrived at New York on the 16th of November, in which city, intemperance having been long undermining a wonderfully strong constitution, he expired Sept. 1812, aged 57 years. Mr. Kean, in one of his visits to America, caused a monument to be erected over his grave. His *Memoirs* were published by his friend Mr. Dunlop, in 2 vols. 8vo., London, 1813.

COOLER. For cooling wine, worts, &c., the hot liquor is sometimes exposed in shallow wooden vessels, and stirred with fans to keep the liquor in motion, and thus expose fresh surfaces to the air. Sometimes cold spring water is allowed to pass through metal pipes placed in the liquor which is to be cooled. In Spain and in Egypt, wine is cooled by placing it in porous earthenware vessels, called by the Spaniards *Alcarrazas:* the vessels are wetted externally, and the consequent evaporation occasions cold within.

COOLEY, THOMAS, an Irish architect, born in 1740, erected, what is not only one of the most elegant public buildings in Dublin, but of its kind any where, the Royal Exchange in that city. He also erected the prison called Newgate (1773), in the same city, and commenced the noble pile of the Four Courts, which was begun by him in 1776, but he did not live to complete it, little more than the west wing being erected at the time of his death in 1784; after which the edifice was carried on by Gandon, with some variations from the original design.

COOLOOLIES. [ALGIERS.]

COOPER. [SHAFTESBURY, EARL OF.]

COOPER, SAMUEL, a miniature painter, was born in London in 1609, and was brought up together with his brother Alexander by his uncle John Hoskins, likewise a miniature painter, and much distinguished in the reign of Charles I. Cooper was without a rival in the time of the Commonwealth, and during the reign of Charles II. He painted the portrait of Cromwell which has been engraved by Vertue, but the head only was finished. Another of Cooper's masterpieces was a head of a person named Swingfield, which he took with him to the court of France, where it procured him the highest patronage: he remained some years in France and Holland. He was also much patronised by the court of Charles II., whose miniature he painted, as well as that of many other persons at the court. Cooper died in London, May 5, 1672, and was buried in old St. Pancras Church, where a beautiful marble monument was raised to his memory. (*An Essay towards an English School of Painters;* Walpole, *Anecdotes of Painting in England.*)

COOPER, SIR ASTLEY, was born at the

village of Brooke, in Norfolk, where his father, Dr. Cooper, was curate. His mother was a popular authoress in her day, and published several novels and other literary productions.

Astley was born on the 23rd of August, 1768, and was the fourth son. As a boy he was remarkable for his liveliness and good humour; he was not remarkable for application to study, but an accident determined his choice of surgery as a profession. In August 1784, young Cooper left home for London. He was placed with Mr. Cline, who was at that time surgeon to St. Thomas's Hospital, and one of the most distinguished surgeons of his day. To his connection with Mr. Cline, and the influence of his example, Sir Astley attributed much of his success in after-life.

In London he began to devote himself with earnestness to his new pursuit. He at this time attended the lectures of John Hunter, and was one of the few who comprehended the real value of this great man's theories and experiments. In 1787 he visited Edinburgh, and on his return he was made demonstrator of anatomy of St. Thomas's Hospital. This speedily led (in 1791) to his being permitted to take part of the lectures on anatomy and surgery, which were then delivered, together with Mr. Cline. He was married in the same year, and after the close of the winter session paid a visit to Paris in 1792. In the next course of lectures which he gave he lectured on surgery alone, and this was one of the first courses in London given on that subject independent of anatomy. It was perfectly successful. He was also this year appointed professor of anatomy at Surgeons' Hall, and was reappointed in 1794 and 1795. The earliest of Mr. Cooper's literary productions appeared in a volume of papers entitled 'Medical Records and Researches,' which was published in 1798. On the death of his uncle, in the year 1800, he was appointed to the office of surgeon at Guy's Hospital, but not without some difficulty.

In 1813 he was appointed professor of comparative anatomy to the College of Surgeons, a post which he occupied rather because there was no one else to fill it than that he felt himself qualified for the task. During this year he removed from the City to the West End, not only with the view of cultivating his interest with those about court, but also for the purpose of avoiding the enormous practice of the City.

In 1817 he performed one of his most remarkable operations, that of tying the aorta. Although not successful, it is undoubtedly the boldest attempt in the annals of surgery. If any circumstances would have justified it, they were those in which Cooper operated. It has been attempted since without success.

In 1820 Cooper was called in to attend on George IV., although he held no official position at court. Shortly after this he removed a steatomatous tumour from the head of the king. In the course of six months after this the king offered him a baronetcy, which was accepted on the condition that, as he had no son, the title should descend to his adopted son and nephew Astley Cooper, who now bears the title.

In 1822 he was elected one of the Court of Examiners of the College of Surgeons, and the same year brought out his great work on 'Dislocations and Fractures.' In the interval between the years 1827 and 1838, Sir Astley Cooper was elected President of the College of Surgeons, Vice-President of the Royal Society, a member of the Royal Institute of France, and of the Royal Academy of Sciences. He also received the honorary degree of D.C.L. from the university of Oxford, and of LL.D. from that of Edinburgh.

In the year 1840, attacks of giddiness, to which he had been subject, increased, and he died Feb. 12, 1841, in the 73rd year of his age. He was interred by his own desire beneath the chapel of Guy's Hospital. A colossal statue by Bailey has been erected to his memory in St. Paul's Cathedral. In his will he left one hundred pounds a year to be given every third year to the best essay on some surgical subject.

Sir Astley Cooper is a striking instance of what unceasing industry can accomplish. As a teacher, his kindness, and the easy manner with which he communicated his knowledge, placed him far above most of his contemporaries. His influence on the surgery of the day was great. 'Before his time,' says Dr. Forbes, 'operations were too often frightful alternatives or hazardous compromises; he always made them follow as it were in a natural course of treatment; he gave them a scientific character; and he moreover succeeded in a great degree in divesting them of their terrors, by performing them unostentatiously, simply, confidently, and cheerfully.'

CO-ORDINATES mean lines, angles, &c., ranged in order. The notion from which the word arose was this, that when the positions of consecutive points on a curve are referred to given points or lines by means of lines or angles, those lines or angles present a succession of *arranged* data, by which the several points of the curve may be treated *in order*. It was Descartes who first used co-ordinates, in the second book of his geometry.

1. Rectilinear co-ordinates in a plane. In the given plane draw two straight lines meeting in a point O (called the *origin*). From any point P draw parallels to the two lines just named: the parts intercepted between P and these lines (called *axes*) are the co-ordinates of the point; one is called the *abscissa*, the other the *ordinate*. When the axes are at right angles, the co-ordinates are said to be *rectangular*; when at any other angle, *oblique*.

2. Rectilinear co-ordinates in space. Through any point O (the origin) draw three planes which intersect in right lines (the axes). Through any point P draw parallels to the axes: the parts intercepted between P and the co-ordinate planes (three in number) are the co-ordinates of P.

3. Polar co-ordinates in a plane. Choose any point O in the plane, and any right line O A passing through O. Then taking any point P, the distance O P (called the *radius vector*) and the angle P O A (which has no distinct name, but might be called the *vectorial* angle) are the polar co-ordinates of P.

4. Polar co-ordinates in space.—Choose a plane (M), a point O, and a line O A, in the plane M. Take any point P above or below the plane, and let fall P B, a perpendicular on (M) meeting (M) in B. Then the radius vector O P, and the angles P O B and B O A are the polar co-ordinates of P. In astronomy, if O be the earth's centre, O A the line passing through the equinox, and (M) the plane of the ecliptic; then B O A is the longitude of P, and P O B its latitude. But if (M) be the plane of the equator, then B O A is the right ascension of P, and P O B its declination.

COOTEHILL. [CAVAN.]

COPAIBA or COPAIVA, an oleo-resin or turpentine (incorrectly termed a balsam, since it is destitute of benzoic acid), is produced not merely from the *Copaifera officinalis* (Willd.), a native of Venezuela, also naturalised in the Antilles, but from ten or twelve species, chiefly natives of Brazil. It varies in appearance and qualities according to the species from which it has been procured, and likewise according to the age of the tree and the time of the year. Incisions are made in the tree, from which flows a liquid differing little in consistence from thick sap. It is collected in calabashes, after which the incisions are closed with wax or clay. The incisions are repeated in general three times each season. The fluid is brighter or darker in colour, more or less rich in volatile oil, more acrid or more bitter, according to circumstances. It is mostly of a light yellow colour, clear and transparent, seldom turbid or cloudy; odour peculiar, volatile; taste oily, mild, slightly aromatic, at last acridly bitter. In a state of purity, it consists of a volatile oil, in the proportion of 40 to 45 per cent., and 50 per cent. of an acid crystallisable resin.

Copaiva is frequently adulterated: the presence of any extraneous matters may be known by the manner in which the suspected portion conducts itself towards solvents and reagents. Copaiva is occasionally mixed with castor-oil, almond, poppy, nut-oil, and the finer sorts of turpentines. Good copaiva should be perfectly soluble in alcohol of the strength of 90 per cent. It is soluble in all known æthers, and in the volatile and fixed oils.

Copaiva acts as a stimulant to the mucous surfaces, especially of the rectum and urino-genital passages: when the dose is small, it influences the kidneys and urethra; but, if large, the rectum. It is chiefly used to lessen increased discharges from those organs, and if judiciously employed generally effects this object; but, if given prematurely or in too large a dose, it seldom fails to aggravate the complaints, and to occasion other serious symptoms.

COPAI'FERA OFFICINA'LIS, the plant from which copaiba is procured, is a tall handsome tree, with a fine head, found wild in the Spanish Main, and occasionally seen in Martinique, where it has been introduced.

The tree, according to Jacquin, is common about the town of Tolu, thirty leagues from Carthagena, growing promiscuously with the species that yield balsam of Tolu, balsam of Peru, and similar secretions.

CO'PAIS, LAKE. [BŒOTIA.]

COPAL, a resin, the produce of the *Rhus copallinum*, a native of Mexico; it is in rounded masses, smooth and brittle, nearly transparent and colourless: it has but little taste, and is nearly inodorous; it is insoluble in water, fusible, and inflammable.

COPAL VARNISH is prepared from Copal and oil of turpentine. It is exceedingly durable and brilliant; it resists scratches, and is susceptible of a fine polish. There are several modifications of this varnish used for particular purposes.

ÇOPARCENERS. [PARCENERS.]

COPENHAGEN (*Kjöbenhavn*), the capital of Denmark, is situated partly on the eastern coast of the island of Seeland, and partly on the northern coast of the island of Amak, in 55° 42′ N. lat., 12° 34′ E. long., and has 123,000 inhabitants. It is divided into three districts—the Aldstadt, or Old Town, the New Town, and Christianshavn. These three quarters are surrounded by ramparts and ditches, and defended by 24 bastions, besides outworks, and towards the sea by the citadel of Frederikhaven. The entrance to the harbour is defended by a formidable fort called Trekroner. The aspect of the city, on emerging from the narrow entrance into the port, which is capable of containing 500 merchant vessels, besides the whole navy, is very grand and striking.

A street called Gother-Gade, which commences at the city walls, a little E. of the North Gate, and runs nearly due S. to the Strömmer, or channel that separates the isle of Amak from that of Seeland, divides the old town from the new, the former lying west, and the latter east of it. Like most old towns, the Aldstadt consists chiefly of narrow winding streets. It contains the Christianburg Palace, near which is the exchange, and the royal library consisting of 470,000 volumes and above 20,000 manuscripts. In this quarter also are the university and several of the finest churches, and also the Kongen's Nye Torv or King's New Market, a central space of great extent, on the south side of which are the botanical gardens and the palace of Charlottenburg, now the Academy of Arts. This area is adorned with an equestrian statue of Christian V.; and out of it 12 of the principal streets run, one of which, called Oster-Gade, contains the finest shops in the city.

The New Town, which is the most northern quarter of the city, and of which Frederickstadt is the finest portion, is laid out in broad streets, and contains the handsomest buildings in Copenhagen. Here is the royal palace of Rosenberg, of which Inigo Jones was the architect, situated among gardens laid out in public promenades; Frederick's Place, an octagonal space, is chiefly formed by the Amalienborg, a structure composed of four large palaces; one of the sides is open, and is embellished with a beautiful equestrian statue of Frederick V.

The third division of Copenhagen is Christianshavn, situated on the island of Amak, and united to the town by two bridges, one of which near the exchange is a drawbridge. In this quarter, which presents regular well-built streets and handsome squares, is St. Saviour's Church, the finest in

Copenhagen, with its singular tower, 288 feet in height; the beautiful Frederick's Church; the warehouses of the Danish East India Company. To the east lies the isle of Nye Holm, in which are the naval arsenal, harbour for the fleet, dockyards, &c.

Copenhagen is the seat of a Lutheran bishop, whose jurisdiction extends to all the Danish dominions: it contains 29 Lutheran and other churches; a Catholic chapel; 3 synagogues; 3 theatres; 22 hospitals; and several other benevolent institutions. The city is entered by 4 gates, one of which is on the isle of Amak: the ramparts of the town and citadel are planted with trees, and laid out in pretty walks. Among the principal institutions must be named the Royal Museum of Antiquities; the Museum of Northern Antiquities; the royal collection of pictures in the Christiansborg Palace; the Naval and Military Academy; Conservatory of Music; and especially the Thorwaldsen sculpture gallery. There are also several learned societies for the promotion of various branches of knowledge.

The harbour has a narrow but deep entrance, and within it is spacious and safe. The port charges, including sound duties and pilotage, amount to 55*l.* on a vessel of 250 tons coming from ports north of Cape Finistère, and 80*l.* if from the south of that cape. Repairs and victualling of ships are effected on very reasonable terms. The trade of Copenhagen is considerable, but stationary rather than improving. The imports are chiefly sugar, coffee, cotton, rice, tobacco, potash, train oil and blubber, iron, salt, wool, dry and salt fish, pitch and tar, flax, hemp, oranges and other fruits, wine, brandy, rum, coals, &c. The exports consist of corn, flour, rape and other seeds, butter, cheese, beef, pork, cattle, wool, hides, bones, spirits distilled from corn, peas, beans, &c. A foreigner cannot trade as a merchant without becoming a burgher, which costs 100*l.* The industrial establishment of the city are numerous; they consist of brandy distilleries, breweries, vinegar distilleries, sugar refineries, soaperies, tanneries, iron foundries; cloth, cotton, silk, linen, and tobacco factories; besides ropewalks and extensive workshops for the making of hats, gloves, &c.

Copenhagen is said to have been founded by Bishop Axel in 1168, but as a city it dates from 1443, when it received municipal privileges, and became the royal residence. On the 2nd of April, 1801, Lord Nelson gained here a victory over the Danish fleet. The town suffered much from bombardment by Lord Cathcart, in 1807. The climate is damp; the water is bad. In the neighbourhood of Copenhagen are several splendid royal residences.

COPERNICUS, NICOLA'US. The real name was *Copernik*, or, according to others, *Zepernic*.

Copernicus was born at Thorn, in Prussia, a town on the Vistula, near the place where it crosses the Polish frontier. His family was not noble; but his uncle, Lucas Watzelrode, was bishop of Warma (episcopus Warmiensis), whence it is frequently stated that Copernicus afterwards settled at a town of that name; whereas the cathedral was situated at Frauenburg, a town on the coast, near the mouth of the Vistula, and, as to social position, about 50 miles both from Königsberg and Danzig. Copernicus was educated first at home, and then at the university of Cracow, where he became doctor of medicine. He paid more than usual attention to mathematics, and afterwards to perspective and painting. After the completion of his studies at Cracow, Copernicus went to Italy, and stayed some time at Bologna, under the instruction of Dominico Maria. His turn for unusual speculation began to appear in his having at this time the notion that the altitude of the pole was not always the same at the same place. He was certainly at Bologna in 1497, and by the year 1500 he had settled himself at Rome, as appears by astronomical observations which he is recorded as having made. At Rome he gave public instruction, and in some official capacity (magno applausu factus mathematum professor): he is said, while thus engaged, to have established a reputation hardly less than that of Regiomontanus. In a few years, but the date is not precisely stated, he returned to his native country, where (having taken orders, we suppose, in Italy) his uncle gave him a canonry in his diocesan church of Frauenburg. There, after some contests in defence of his rights, not very intelligibly described, he passed the rest of his days in a three-fold occupation—his ecclesiastical duties, his gratuitous medical practice among the poor, and astronomical researches. He went very little into the world; he considered all conversation as fruitless, except that of a serious and learned cast; so that he formed no intimacies except with grave and learned men, among whom are particularly recorded Gysius, bishop of Culm, and his pupil and follower, the celebrated Rheticus. He was all this time engaged as well in actual observation as in speculation. His instrumental means however were not superior to those of Ptolemæus; and he perfectly well knew the necessity of improvement in this department. 'If' (said he to Rheticus, whose Latin has certainly been misprinted, but in a manner which leaves the meaning sufficiently clear), 'I could determine the true places of the heavenly bodies within ten seconds of a degree, I should not glory less in this than in the rule which Pythagoras has left us.'

Copernicus was struck by the complexity of the Ptolemaic system, and searched all ancient authors to find one of a more simple character. The earth stationary in the centre of the universe, the planets moving round it carried on enormous crystalline spheres (for, though many might use this as mere hypothesis, the refutation of Tycho Brahé from the nature of the orbits of comets shows that he considered the *material* spheres as one of the opinions of his day), and finally the enormous sphere of the fixed stars, carried round once in every 24 hours, struck him with a feeling that such a system could not be that of nature. He found in Martianus Capella and others proofs that an opinion had formerly prevailed to some extent that Mercury and Venus, at least, moved round the sun; that the Pythagoreans held the rotation of the earth; and that Philolaus had even imagined the earth to have an orbit round

the sun. It is very doubtful to what point these several opinions were carried, or on what grounds they were supported: it is sufficient for our purpose here that Copernicus found such doctrines attributed to the sects and persons above mentioned, and took them into consideration, with a view to see how far phenomena could be made to follow from them with more simplicity than in the system of Ptolemæus. At what time he finally adopted his own system is not very clear; his work was completely written in 1530, and from that time he did nothing except to add and alter. And since Copernicus says, in his epistle to Paul III., that he had been very long pressed by his friends to publish, the above date is not improbable. In the meanwhile his opinion was circulated even among the vulgar; and he was satirised on the stage at Elburg. His reasons had convinced Reinhold, Rheticus, Gysius, and others; and, upon the representations made to him, Cardinal Schonberg was desirous of having the work printed, and wrote to Copernicus to that effect from Rome in 1536. But, though backed by a cardinal, a bishop, and two of the most learned astronomers of the age, Copernicus was well aware of the odium which an attempt to disturb established opinions would excite; and it was not, it seems, till about 1541 that a tardy consent was extorted from him. The work was accordingly delivered to Gysius, and by him to Rheticus, who, thinking that it would be best printed at Nürnberg, intrusted it to Andrew Osiander, who superintended the printing, and wrote the remarkable preface, which is always attributed, and even by Delambre, to Copernicus himself. This is explicitly stated by Gassendi, and the reason assigned is the obvious one that Osiander (besides thinking it necessary to print the cardinal's request) was afraid of shocking public opinion, and thought it best to represent the scope of the work, not as actually affirming the motion of the earth, but as using such an hypothesis for the more simple and ready calculation of the heavenly motions.

He says, 'It is not necessary that hypotheses should be true or even probable; it is sufficient that they lead to results of calculation which agree with observations.' He points out the admitted defects, and admitted unlikelihood, of several points of the Ptolemaic system; requires that the new hypothesis should be admitted on the same footing as the ancient ones; and ends thus: 'Neither let any one, so far as hypotheses are concerned, expect any thing certain from astronomy, since that science can afford nothing of the kind; lest, in case he should adopt for truth things feigned for another purpose, he should leave this study more foolish than he came.'

The work was published in 1543. The second edition, edited by Rheticus, was published at Basle, 1566, and is little esteemed; the third, edited by Muler, was printed at Amsterdam in 1617, and again in 1640, with notes: it is the most correct of the three.

The work 'De Revolutionibus,' &c. consists of an introductory dedication to Paul III., and six books. In the former, Copernicus distinctly informs us, that, being discontented with the complexity of the prevailing systems, he closely examined all the writings of the ancients, to see if he could find any thing better. He found the testimony of Cicero and Plutarch as to the opinions of Nicetas, Pythagoras, and Philolaus. He therefore claims for himself the same licence.

The first book contains the propositions — 1. That the universe is spherical; which is proved by old reasons, such as that a sphere is the most perfect figure, &c. 2. That the earth is spherical; for which he gives the same reasons as are now given. 3. That the earth and sea make one globe. 4. That the motions of all the heavenly bodies must be either uniform and circular, or compounded of uniform and circular motions. Nothing but circular motion, he asserts, could reproduce phenomena periodically; and he maintains that a *simple* body must move circularly. 5. He examines the questions whether the earth can have an axical and an orbital motion, and satisfactorily shows that, supposing the distance of the fixed stars to be immense, there is no astronomical reason to the contrary. 6. He gives what he imagines to be a proof that the sphere of the fixed stars is immensely distant. It must be observed that he has no notion of a universe of stars unequally distributed throughout space. 7 and 8. He examines and argues against the reasons of the ancients for placing the earth in the centre of the universe, by considerations which are as purely imaginary as those against which he was contending. He says that circular motion must be that of a whole, rectilinear motion that of a part separated from its whole; and from this assumption he deduces the falling of a body to the earth. That rectilinear and circular motion can exist together is, according to him, a thing of the same kind as the notion of a horse existing with that of an animal. He is throughout possessed by the opinion that there must be a *centrum mundi*, or fixed point in the middle of the universe, which however he considers to be the sun, not the earth. It is needless to say that the *centrum mundi* forms no part of the Newtonian system. 9. He contends for the possibility of the earth having several motions. 10. He establishes the order of the planets, remarks that it is impossible to explain the motion of Mercury and Venus upon the supposition of the earth being their centre, and observes that the motion of the other planets round the sun is perfectly possible, consistently with that of the earth, if the radii of their orbits be made large enough. He draws a diagram of the system in the manner now usual.

He explained, for the first time and with brilliant success, the variation of the seasons, the precession of the equinoxes, and the stations and retrogradations of the planets. The latter point is fully made out, and in the manner now adopted, so far as the *qualities* of the phenomena are concerned: we shall presently see the method of rectifying the *quantities*. With regard to the variation of the seasons, Copernicus explains it rightly, from the continued parallelism of the earth's axis. But he cannot obtain this parallelism from his mechanics. He imagines that, if the globe of the

earth move round the sun, and also round its own axis, the axis of rotation must always preserve the same inclination to the line joining the centre of the earth and sun: just as when a ball fastened by a string is made to spin, and a conical motion is simultaneously given to the string and ball. It is most evident that he got this idea from the solid crystal spheres. If the earth's axis were fixed in an immense sphere, with which it turned round the sun, and if in the first instance the axis produced would pass through the axis of the sphere, the complete phenomenon of Copernicus would be produced. The earth's axis would then describe a cone yearly. To produce parallelism, Copernicus imagines what we may call an anti-conical motion, namely, that the earth's axis is itself endued with such motion, independent of its motion in the sphere, as would, did it act alone, carry the axis round the same cone in a year, but the contrary way. The effect of the two motions is to destroy each other, and the axis remains parallel in all its positions. Then, by supposing the anticonical motion to be a little greater than the direct conical motion, by 50″ in a year, he produces the phenomenon of the precession of the equinoxes.

All that we have hitherto described will explain the mean motions of the solar system, and the mean motions only. To account for all irregularities, Copernicus, hampered with the notion that all motions must be compounded of circular ones, is obliged to introduce a system of epicycles entirely resembling that of Ptolemæus, and which will be most conveniently described under the head PTOLEMAIC SYSTEM. It will surprise many readers to hear that the greater part of the work of Copernicus is taken up with this description of this most essential branch of the real 'Copernican system.' But it must be added that the Copernican epicycles are more successful than the Ptolemaic. The latter were utterly insufficient as a means of *demonstrating* the changes of distance of the planets and earth. The former, founded upon a basis which brought this point not very far from the truth at the outset, made a much nearer approximation to a correct representation of the inequalities.

While Copernicus was in daily expectation of receiving a complete copy of his work from Rheticus, he was seized with hemorrhage, followed by paralysis. The book actually arrived May 23, 1543, and, as Gysius wrote to Rheticus, Copernicus saw it, and touched it, but it was too near his end to do more. He died in a few hours after, and was buried in the cathedral to which he belonged.

COPING, the stone or brick covering of a wall, intended to protect it from the weather. Flat coping is called *parallel coping*, and is used upon inclined surfaces, as on the gables and parapets of houses, and also on the tops of garden and other walls. *Feather-edged* coping has one edge thinner than the other. *Saddle-back* coping is thicker in the middle than at the edges. Coping-stones should project over the walls which they cover, and should have a groove, or *throating*, underneath the projected part to throw off the water. The coping of Gothic battlements and the walls of churches, castles, and dwellings in the Gothic style of architecture, have a deep throating in the form of a bold cavetto in front, and are sometimes decorated with mouldings.

COPLEY, JOHN SINGLETON, was born at Boston, in the United States, July 3, 1737. He was educated in America; and without the aid of instructors, simply by studying from nature in the groups around him and the neighbouring woods, he taught himself to paint. In 1760 he sent a picture of a 'Boy and Tame Squirrel' to the exhibition of the Royal Academy, which was universally admired. In 1774 he indulged a long-felt wish to visit Italy, which he reached by way of London. In the following year he returned to London, and established himself in George Street, Hanover Square. In 1777 he was elected an associate of the Royal Academy; and in 1783 he became a member. He died in 1815. One of his children, now Lord Lyndhurst, possesses some of his father's best paintings.

The best known of Copley's works is the 'Death of Lord Chatham,' now in the National Gallery, London, which includes some valuable portraits. It was engraved by Bartolozzi on a plate of an unusual size, and the engraving was extensively sold. He painted many historical subjects, some sacred, and not a few illustrating the history of England, particularly the period of the Revolution. Perhaps the most spirited design from his pencil is the death of Major Pierson, a young officer who died in the defence of St. Helier's, in Jersey, against the French, at the moment when his troops gained a victory over an enemy of superior numbers.

COPPER is one of the metals with which the Greeks were acquainted, under the name of χαλκός (chalcos): it was used by them, alloyed with tin, for cutting and warlike instruments, before iron was known, or at any rate before it was common.

Copper has a red colour, and is capable of receiving a good polish; when warmed or rubbed, it emits a disagreeable smell, and it imparts a nauseous taste: all its preparations are poisonous. Its density is about 8.9. It is both malleable and ductile, and is so tenacious, that a wire $\frac{78}{1000}$ of an inch in diameter supports a weight of 302 pounds without breaking; it is extremely sonorous, and is a good conductor of heat and electricity. It melts at a temperature about 1196° Fahr.

This metal is one of those which occurs in the greatest number of places and in the largest quantity. It is found in small proportion in a metallic state, and is either amorphous, crystallised in cubes, octahedrons, or dendritic. Its ores are very numerous, the chief being sulphuret of copper and iron (Copper Pyrites), and sulphuret of copper (Nitreous Copper Ore). It occurs also naturally in some oxides and salts.

Copper pyrites occurs in the north of Europe, in England, especially in Cornwall, Devonshire, and Anglesey, and in many parts of Asia and Africa, and the American continents.

In 1844, a vein of very productive copper ore was discovered in South Australia. In 1846

the owners of the Capunda mine shipped to England 1200 tons of copper-ore, which sold for 25*l.* a ton, while English copper-ore brought only 19*l.* But the Burra-Burra mine is perhaps the richest in the world. It contains a layer 17 feet high and very wide, which is worked like a quarry. The ore is a pure oxide of copper, and fit to be put at once into the smelting-forge, and yielded in 1846 from 35 to 75 per cent. of pure metal. In July 1846, several tons of ore from this mine were sold at Swansea for 31*l.* 11*s.* a ton; and during the six months preceding May 1837, 2700 tons were raised from the same mine, which yielded 87 per cent. of pure copper, and, sold for 31*l.* a ton. Such is the facility of working the Burra-Burra mine, that in 30 days 8 miners dug out 80 tons of ore.

In 1846 a rich vein of copper ore was discovered near Kewena Point, on the south side of Lake Superior, in America; it yields ore containing from 50 to 90 per cent. of pure copper.

The copper of this country is chiefly produced from copper pyrites, yielded by the mines of Cornwall and Devonshire. As coal is scarce in those counties and plentiful in South Wales, the ore is conveyed to the latter district for smelting. The first process of smelting is to calcine the ore; this is done by heating it in a calcining oven, which expels the arsenic and the sulphur contained in the ore, oxidises the copper and the iron, and reduces them to a black powdery state. This powder is then melted in a highly heated oven; and when liquid the mass is well stirred, to allow the metallic sulphuret to separate from the earthy matter. This metallic sulphuret is drawn off into a vessel of water and granulates into *coarse metal*, which is, weight for weight, four times as rich in copper as the original ore. The coarse metal is again calcined, and again melted; if drawn off into water, it obtains the name of *fine metal*, but if into sand, *blue metal:* it now contains 60 per cent of copper (the coarse metal having about 33 per cent). Another calcination and another melting bring it to the state of *coarse copper*, which contains 80 to 90 per cent. of pure copper. This coarse copper is exposed to a high heat in a roasting furnace, by which volatile matters are expelled, and the metals become oxidised; it is kept in a melted state for many hours, and is drawn forth from the furnace as *blistered copper*, almost wholly free from sulphur, iron, and other impurities. The blistered copper is transferred to a refining furnace, covered with charcoal, and is brought to a liquid state. It is thus rendered tough and malleable, and fit for subsequent manufacturing processes.

Attention has for some years been directed to the commercial advantage of smelting copper-ore by electric agency. Several years ago, Messrs. Claubry and Dechaud submitted to the French Academy of Sciences a plan in which the ore was first to be converted into a sulphate of copper by ordinary chemical means, and then the copper precipitated from a solution of this salt by electricity. In 1843 and 1844, Mr. Wall took out patents; and Mr. Ritchie, in 1844, took out another patent, having similar objects in view, namely, to separate the pure copper from the impurities of the ore, while in either a melted or a liquid state, by electric agency.

Various important applications are made of copper in the state of sheets or rolled copper. Copper, like most of the unmixed metals, is generally rolled hot, being malleable at all degrees of heat till it approaches its melting point. Most of its alloys with zinc, forming brass, are malleable only when cold, with the exception of one or two lately brought into use, which are extremely malleable at a certain high temperature. Copper for the purpose of rolling leaves the smelting works in cakes about 12 × 18¼ inches, each weighing about 90 lbs. The cakes are put into *muffles*, where they are uniformly heated; and the heated copper is drawn between cast-iron rollers. This double process of heating and rolling is repeated until the cake of copper is reduced to the form of a sheet. An oxide forms on the surface during these operations; but this is easily removed by the application of a saline liquid, aided by heat. The edges are then trimmed, and the sheet copper is fit for application to manufacturing purposes. Copper sheets are now often produced from a solution of sulphate of copper by ELECTRO-METALLURGY.

We shall now describe the more important compounds of copper, premising that its atomic number or combining equivalent is 32.

Oxygen and *copper* form two compounds; a *Suboxide* (O^1, Cop.^{2}), and a *Protoxide* (O^1, Cop.^{1}). The suboxide is a red substance not readily soluble in acids; it forms with ammonia a colourless solution, which becomes blue on exposure to the air. The protoxide is black, insoluble in water and in the fixed alkalis, and is not decomposed by the mere action of heat; it combines with acids in general, and is the base of all the salts of copper; it imparts a fine blue colour to ammonia, and a green colour to glass.

Chlorine and *copper* unite to form two compounds: the *Subchloride* (Chlo.^{1}, Cop.^{2}), and the *Protochloride* (Chlo.^{1}, Cop.^{1}). The subchloride is a yellow translucent crystalline compound, insoluble in water; it is found in Peru, and obtains the name of *Green Sand of Peru*, or *Atacamite*. The protochloride is a yellow substance, soluble in water. *Sulphur and Copper* form a *Disulphuret* (S^1, Cop.^{2}), and a *Sulphuret* (S^1, Cop.^{1}). The former of these occurs native, as *Vitreous Copper*, a black shining substance, and is also produced artificially, in the state of a brittle brownish-black mass. The sulphuret is also a blackish substance. Copper combines with *Bromine*, *Iodine*, *Fluorine*, *Selenium*, and *Phosphorus*, to produce compounds which are not of much importance in chemistry or the arts.

Copper and *other metals* form *Alloys of Copper*. Those which result from its union with tin and with zinc are the most important, such as *Bronze*, *Bell-Metal*, and *Brass*. *Tutenag* is an alloy of copper, zinc, and a little iron. *Tombac*, *Dutch Gold*, *Similor*, *Prince Rupert's Metal*, and *Pinchbeck*, are alloys containing more copper than exists in common brass. *Manheim Gold* is a peculiar alloy of copper and zinc, which is said to consist of

three parts of copper and one part of zinc. *Packfong*, or the white copper of China, is an alloy of copper, nickel, and zinc, now extensively employed in this country under the name of *German Silver*.

Acids and *oxide of copper* form salts, some of which occur in nature, and others are very extensively used in the arts.

Acetic acid and *copper* form two salts, namely, the acetate of copper, sometimes called *distilled verdigris*, and the diacetate of copper, or *common verdigris*. The diacetate is in the form of light blue acicular crystals, of a silky lustre; they are decomposed by water, and by acids and alkalies. It is much employed in painting and in dyeing. It consists of Acid ^{1}, Oxide ^{2}, Water ^{6}. The acetate is in the form of beautiful deep-green rhombic crystals, which are composed of Acid ^{1}, Oxide ^{1}, Water ^{1}. *Arsenious Acid* combines with copper to form the *Arsenite*, or *Scheele's Green*, a valuable pigment. *Arsenic Acid* forms with the oxide an *Arseniate*, which is one of the series of copper ores. *Carbonic Acid* combines with copper in two proportions: the *Green Carbonate*, or *Green Verditer*, consists of Acid ^{1}, Oxide ^{2}, Water ^{1}; whereas the *Blue Carbonate*, or *Refiner's Verditer*, is composed of Acid ^{2}, Oxide ^{3}, Water ^{1}. *Nitric Acid* combines with copper to form a *Nitrate*, from which *Blue Verditer* is prepared. *Phosphoric Acid* combines to form a *Phosphate*, a light blue precipitate. *Sulphuric Acid* combines with copper to form a *Sulphate*, known also by the names of *Roman Vitriol*, *Blue Vitriol*, and *Blue Copperas*. It is in the form of large and beautiful blue crystals, formed of Acid ^{1}, Oxide ^{1}, Water ^{5}; it is prepared in large quantity for the use of colour-makers and dyers, and is one of the most useful of the salts of copper. Other salts are formed by combination of other acids with the oxide; and most of them produce either blue or green solutions with water.

Copper, in a metallic state, produces no action in the human system. When in the form of oxide, its action is considerable, though variable, being dependent on the kind and quantity of acid which it may meet with in the stomach; but all its salts occasion peculiar effects, which may be fatal if the dose be large. The preparations of copper used in medicine are, the sulphate, or blue vitriol, called also blue-stone; the ammoniated sulphate, or ammoniuret; and the diacetate, or verdigris. The first two are used internally, the last rarely; it and the sulphate being applied by surgeons to wounds and sores in particular states. The sulphate influences powerfully the nervous system, and acts as a tonic and antispasmodic; it has also some astringent properties. In cases of slow poisoning by copper, such as happen when some of its salts, in substance or solution, have been taken daily for a considerable time, fatal results follow; and the copper may be detected accumulated in the liver, though not discoverable in any other organ of the body. The ammoniacal sulphate is often used in convulsive and nervous diseases. The diacetate is in frequent use in the formation of liniments and ointments. If copper vessels employed in cookery be not cleansed after use, verdigris is likely to form on them, and many fatal effects have resulted from negligence in this respect. Tinning the interior of copper vessels affords protection so long as the tinning remains entire. In case of poisoning, the best antidotes are whites of eggs, milk, or wheat-flour; ferrocyanate of potass, or iron filings in gum-water, may be given; sugar or any syrup is useful.

COPPER, MANUFACTURES IN. The principal peculiarity of manufactures in copper arises from the facility with which it may be fashioned by the hammer. The processes of casting and rolling, both of which are extensively practised in the manufacture of copper goods, so closely resemble the like operations upon other metals, that they do not require further notice; but the operations of the coppersmith are very distinct from any other branch of metallic manufactures. For example, in the manufacture of the lower half or hemisphere of the large vessels called *sugar-pans*, used in sugar-refining, the copper is in the first place cast into a form resembling that of a double convex lens, or spectacle-glass, thickest in the middle, and diminishing gradually towards the edges. This lens is then subjected to the powerful blows of a tilt-hammer, directed more continuously near the centre than near the edges. This hammering, while it reduces the thickness of the copper, makes it curl up at the edges, and assume a dished or hollow form. Another process no less peculiar to the manufacture of copper is the hammering, technically called *planishing*, by which the metal is rendered dense and firm, and its toughness is increased. Any one who examines a large copper vessel will perceive, both in the hammer-marks and in the density and close grain of the surface, evidences of the planishing process.

It is by the combined operation of casting, rolling, hammering, and planishing, aided by the fastening processes of riveting and soldering, that nearly all articles of copper are made. There are five different modes of forming copper piping out of sheet metal; in the first the edges of the sheet, which is curved round a mandril, are made to meet without overlapping, and united by hard solder; in the second they overlap, and are united by soft solder; in the third they overlap, and are secured by rivets; in the fourth the edges are folded one over another, and made close and firm by hammering; while in the fifth both edges of the pipe are turned back, and covered with a strip of sheet metal, the two edges of which are turned in and hammered down.

COPPER TRADE. Copper was at first obtained in this country in small quantities in working the tin-mines in Cornwall; but about the close of the 17th century mines were set at work purposely for copper. Improvements in the art of smelting have greatly increased the products of the mines, and ores which produce only three or four per cent. of metal are now smelted. The number of persons employed in the copper-mines in England and Wales, in 1841, was 15,407: and the number employed in copper manufactures was 2126. The average annual produce of the

Cornish mines increased from about 3300 tons in 1780 to 12,000 tons in 1840. The value of the produce of all the British copper-mines is in good years about 1,500,000*l.* Four-fifths of the whole quantity is raised from the Cornish mines; the rest being derived from Devonshire, Staffordshire, Anglesea [AMLWCH], and the Isle of Man. The total quantity of copper from all British mines in the following years has been as under:—

Years.	Tons.
1835	14,474
1836	15,369
1837	15,360
1838	13,598
1839	14,672
1840	13,022

In the year ending 30th June 1840, the mining and smelting operations in Cornwall and Swansea were as follows:—

CORNWALL.

Ore raised	159,214 tons
Value	792,750*l.*
Metallic copper produced .	11,056 tons
Produce per cent. of metal .	7½

SWANSEA.

Ore smelted	56,285 tons
Value	674,012*l.*
Produce per cent. of metal .	15
Quantity of copper . . .	8,476 tons.

The copper yielded by the British mines being more than sufficient for the use of the kingdom, a considerable quantity is exported every year, both unwrought and in a manufactured state.

The quantity of British copper retained yearly for use, on an annual average of each decennial period during the present century, is calculated by Mr. Porter ('Progress of the Nation,' iii. p. 92) as follows:—

1801-10,	3694 tons.
1811-20,	3472 „
1821-31,	4912 „
1831-40,	6290 „

The exports of copper goods in 1845 amounted to about 19,000 tons; one-third of which went to France, and one-fourth to the East Indies. They consisted of 9786 tons unwrought, in bricks, pigs, &c., 30 tons of coin, 7742 tons of sheet, nails, &c., 4 tons of wire, 474 tons of wrought copper. The copper-ore imported in the first two months of 1848 amounted to 5039 tons. The manufactured copper and brass goods exported in the same period amounted in value to 191,746*l.*

Within the last twenty years a considerable quantity of copper-ore has been brought to England for the purpose of being smelted and re-exported in the metallic state. These importations amounted only to 2 cwts. in 1825, and increased to 56,697 tons in 1845. Since that period a large quantity has been imported from Australia. [COPPER.]

The duty on foreign copper-ore, previous to 1842, was 12*l.* a ton, and on smelted but unwrought copper 27*l.* a ton, rates of duty which acted as a prohibition. By the tariff of 1842 the duty on foreign copper-ore was reduced to from 3*l.* to 6*l.* a ton, according to the quality, and on smelted but unwrought copper to 8*l.* 15*s.* a ton. April 17, 1848, the Chancellor of the Exchequer, in a committee of the House of Commons, carried a resolution to admit copper-ore at the nominal duty of 1*s.* a ton, and copper-cake (from Chili) at 2*s.* 6*d.* a ton.

COPPER-PLATE. [ENGRAVING.]

COPPERAS. The sulphate of copper is frequently called Blue Copperas, the sulphate of iron Green Copperas, and the sulphate of zinc White Copperas.

COPTIC LANGUAGE. We designate by the term Coptic the language spoken and written by the inhabitants of Egypt since the introduction of the Christian religion into that country; and we distinguish it from the more ancient Egyptian language, which was in use under the Pharaohs and the Ptolemies. The word *Copt* is probably the main part of the ancient name of the country Ægyptus. The name *Copts* seem to have been used as the common designation of the Christians in Egypt from the time of the Emperor Heraclius. What was the relation of the ancient to the more recent language of Egypt, we are unable to determine, as our information respecting the former is very imperfect. From the analogy however of other languages, the successive changes of which can be traced with tolerable accuracy, we are warranted in supposing that the old Egyptian language bore a relation to the Coptic similar to that which the Latin does to the Italian, the Zend to the modern Persian, or the Sanscrit to many of the vernacular dialects now spoken in India. Egypt lost much of its consequence when it became a Roman province; and when Alexandria ceased to be a royal residence the arts and literature would naturally fall into decay. Another cause which proved fatal to Egyptian literature was the early introduction of Christianity into Egypt. This event, which contributed to extend the study of Greek literature and the use of the Greek language, at the same time deprived the ancient literature of the country, as chiefly connected with the old religion, of the better part of its interest. But the language of the country continued in ordinary use, particularly in the interior provinces. The Egyptian, or as it is more appropriately called during these later times, the Coptic language, survived for seven or eight centuries after the conquest of Egypt by the Arabs. But the Coptic language gradually gave way to the Arabic, which is now the language generally in use throughout Egypt.

The literature extant in the Coptic language is by no means rich. The only part of any value seems to be the Coptic translations of the Bible, probably made towards the close of the third and in the beginning of the fourth century, and following, as far as the Old Testament is concerned, the Septuagint version, the readings of which, as well as those of the Alexandrine text of the New Testament, they may serve to determine. Besides these, there exist Coptic translations of sermons from the Greek fathers, fragments of the decrees of councils, liturgies, acts of martyrs, ori-

ginal mystic treatises on ethics, with numerous examples from the lives of pious hermits, and translations from the Greek of some apocryphal books of the New Testament. Except its use in biblical criticism, the study of Coptic is important only as furnishing means by which the inquiry into the hieroglyphic records of ancient Egypt may be prosecuted.

Under the Ptolemies, and afterwards under the Romans, new forms of administration were introduced into Egypt; and the inhabitants borrowed from their conquerors the names of public officers and other political terms. The Coptic language received a further supply of foreign words from the introduction of Christianity.

The ancient Egyptians, besides the hieroglyphics, possessed an alphabet or syllabic system of writing. In the modern Coptic the Greek alphabet is employed, with eight new letters, which express certain articulations peculiar to the Copts.

Of the three Coptic dialects, the Memphitic, Sahidic, and Bashmuric, the first appears to be the most polished. The Sahidic has a greater number of Greek expressions.

(Henry Tattam, *A Compendious Grammar of the Egyptian Language*, London, 1830, 8vo.; *Lexicon Ægyptiaco-Latinum*, Oxford, 1825, 8vo.; Am. Peyron, *Lexicon Linguæ Copticæ*, Turin, 1835, 4to.; Quatremère, *Recherches Critiques et Historiques sur la Langue et la Littérature de l'Egypte*, Paris, 1808, 8vo.)

COPTIS, a genus of plants belonging to the natural order *Ranunculaceæ*. The rhizomata of *C. trifolia*, Gold Thread, are bitter, and when administered as a medicine act in the same manner as quassia, gentian, and other bitters, but are not astringent.

COPTS, the name given to the Christian descendants of the ancient Egyptians, is said to be derived from Coptos, once a great city in Upper Egypt, to which, during their persecution by the Roman emperors, many of the Egyptian Christians retired. The secession of the early Christians of Egypt from the Church of Constantinople occasioned bitter enmities to spring up between them and the Greeks, on which account they suffered so much persecution, that they united with the Arab invaders of their country to expel the Greeks; but, though their revenge was gratified, they were compelled to bow to a heavier yoke. A few of the Copts belong to the Greek, and some to the Latin Church; but the great majority belong to the Monophysite heresy, which was condemned by the council of Chalcédon A.D. 451. The number of churches and convents in ruins prove that the Copts were once far more numerous than at present. The reduction in their numbers to the present amount (150,000) is stated to be owing to persecution, and conversion to Mohammedanism. They are forced to adopt distinctions of dress, and they may not wear a red or white turban like the Moslems. The male adults pay a tribute, besides the income tax which is paid by all the inhabitants; but they are exempt from military service. The women veil their faces according to the custom of the country.

The Coptic language is now understood by few persons, and, as the Arabic has been adopted in its stead, it may be considered as a dead language. [Coptic Language.] There are numerous schools, but for boys only; very few females are taught to read. All the Copts who have been instructed at school still pray in Coptic both in church and in private; and the Scriptures are always read in the churches in that language; but they are explained in Arabic.

The Coptic hierarchy consists of a patriarch, a metropolitan of the Abyssinians, bishops, archpriests, priests, deacons, and monks. The patriarch is styled 'Patriarch of Alexandria,' but generally resides in Cairo. He is chosen by lot from the monks of St. Anthony; and he appoints the metropolitan of Abyssinia. The monks undergo a severe novitiate and take the vow of celibacy; the other orders of the clergy also remain unmarried, there being however some exceptions, as marriage does not prevent a man becoming a priest, but if the wife dies he may not marry again. The clergy are supported by the gifts of their hearers and by their own industry. The number of Coptic churches and convents is said to amount to 146, but the former are few in comparison with the latter. Baptism is practised; children are generally circumcised; confession is required of all members of the Coptic Church, and is indispensable before receiving the Sacrament. Wednesday and Friday are observed as fast-days. The seven great festivals are as follows:—the Nativity, the Epiphany, the Annunciation, Palm Sunday, Easter, the Ascension, and Whit-Sunday. The Copts are not allowed by their church to intermarry with persons of any other sect.

(Lane's *Manners and Customs of the Modern Egyptians.*)

CO'PULA. The copula is that word which connects the subject with its predicate, as in the sentences 'I *am* a Christian,' and the 'tree *is* green,' where the expressions 'I' and 'tree' respectively denote the subject, and the verbs 'am' and 'is' the copula. The copula is often included in the term which contains the predicate, as 'the man walks,' in which expression the term walks contains the predicate of 'walking,' and also the notion of the 'copula,' or connection of the idea of 'man' and 'walking.'

COPYHOLD, a term applied to lands held by what is called tenure by copy of court roll, the nature of which is thus described by Littleton (sect. 73, 4, 5): 'Tenant by copy of court roll is as if a man be seised of a manor, within which manor there is a custom which hath been used time out of mind of man, that certain tenants within the same manor have used to have lands and tenements to hold to them and their heirs in fee-simple or fee-tail, or for term of life, at the will of the lord, according to the custom of the same manor. And such a tenant may not alien his land by deed, for then the lord may enter as into a thing forfeited unto him. But, if he will alien his land to another, it behoveth him after the custom to surrender the tenements in court into the hands of the lord to the use of him that shall have the estate. And these tenants are called tenants by copy of court roll, because they

have no other evidence concerning their tenements, but only the copies of court rolls.' The title to copyhold lands is altogether constituted by custom. Subject to the estates in them which the custom confers, they are held by the lord under the common law as part of the demesnes of his manor. For these customary estates were in their origin mere tenancies at will, though by long usage they have in many instances acquired the character of a permanent inheritance, descendible (except where otherwise modified by custom) according to the rules of the common law; and as tenancies at will they continue to be considered in all questions relating to the *legal* as distinguished from the customary property in the land.

The essentials of copyhold tenure, according to Blackstone, are: 1, that lands be parcel of and situate within that manor under which they are held; and 2, that they have been demised or demisable by copy of court roll immemorially.

The burdens to which a copyhold tenure is liable, in common with free tenures, are fealty, services, reliefs, and escheats; besides which it has certain liabilities peculiar to itself in the shape of heriots and fines. A heriot is the render of the best beast or other chattel (as the custom may be) to the lord on the death of a tenant.

Some fines are due on the death of a tenant, and others on the alienation of the land; they are sometimes fixed by the custom, sometimes arbitrary; but the lord cannot demand by way of fine upon the descent or alienation of the land more than the amount of two years' improved value of the property, after deduction of the quit-rents to which it is liable. The ordinary mode of alienating a copyhold estate in fee-simple is by *surrender and admittance*. The copyholder appears in court and professes to surrender or deliver up his land to the lord (either in person or his steward), expressing the surrender to be to the use of A and his heirs; and thereupon A is *admitted* tenant of the land to hold it to him and his heirs at the will of the lord according to the custom of the manor. He then pays a fine, and also (if required) does fealty. The surrender and admittance are entered on the court rolls; and the new tenant, paying his fees to the steward, receives a copy of this fundamental document of his title. Surrenders are made in various forms, as by the delivery of a rod, glove, or other symbol, to the steward or other person who takes the surrender. Surrenders may also be made to the lord in person out of court; to the steward; and by special custom to the lord's bailiff; to two or three copyholders; or into the hands of a tenant in the presence of other persons. But, when a surrender is taken out of court, it must be presented by the homage or jury of copyholders at the next general court, except where a special custom authorises a presentment at some other court. Admittances also may be made out of court and even out of the manor.

The Statute 12 Car. II. c. 24, abolished all the old tenures in England except common soccage, copyhold, and some other specified tenures.

The Statute of Entails (13 Edw. I.), commonly called the Statute of Westminster the 2nd, does not extend to copyholds; but in most manors a custom of entailing copyholds has prevailed. By the 3 & 4 Wm. IV. c. 74, sect. 50-54, entails of copyholds may be barred by assurances made in pursuance of the provisions of that act. Neither the Statute of Uses (27 Henry VIII. c. 10), nor the Statutes of Partitions (31 Henry VIII. c. 1, and 32 Henry VIII. c. 32), nor the statute enabling persons having certain limited interests in lands to grant valid leases (32 Henry VIII. c. 28), nor any of the local Registry Acts, are applicable to copyholds.

Copyholds now descend to the heir-at-law according to the rules that regulate the descent of all other kinds of land, under the 3 & 4 Wm. IV. c. 106.

The Statutes of Wills (32 Hen. VIII. c. 1, and 34 & 35 Hen. VIII. c. 5) do not include copyholds, and in order to enable a person to dispose of copyholds by will, it was necessary that he should surrender them to the use of his will, as it was called. This ceremony was rendered unnecessary in most cases by the 55 Geo. III. c. 192. The 12th section of the Statute of Frauds, whereby estates *pur auter vie* were made devisable, did not extend to copyholds. By the 1st section of the 1 Vict. c. 26, the last statute which relates to wills and testaments, the 55 Geo. III. c. 192, and the above-mentioned enactment of the Statute of Frauds, are repealed; and by the 3rd section the power of disposition by will is extended to customary freeholds and tenant-right estates, and all estates of a customary or copyhold tenure, without any surrender or admittance; and to all estates *pur auter vie*, whether of customary freehold, tenant-right, customary, or copyhold tenure. By the 11th section of the 1 & 2 Vict. c. 110, copyholds are made subject to execution by judgment creditors in the same manner as freeholds.

Copyhold lands belonging to traders have been subjected to the operation of the bankrupt laws (Stat. 6 Geo. IV. c. 16, sect. 68 and 69; 3 & 4 Wm. IV. c. 74, sect. 66); and by Stat. 3 & 4 Wm. IV. c. 104, customary hold and copyhold lands which a man has not by his last will charged with or devised subject to the payment of his debts, are rendered assets to be administered in a court of equity for the payment both of specialty and simple contract debts. Copyholds are not liable (except by special custom) to courtesy or dower. The lord may by a temporary seizure of the land compel an heir or devisee to come in and be admitted; and he is himself compellable by a mandamus of the Court of Queen's Bench to admit any tenant, whether claiming by descent or otherwise.

By the general custom of all manors, every copyholder may make a lease for any term of years, if he can obtain a licence from the lord, and even without such licence he may demise for one year, and in some manors for a longer term; and the interest thus created is not of a customary nature, but a legal estate for years, of the same kind as if it had been created out of a freehold interest. But every demise without licence for a longer period than the custom warrants, and in general every alienation contrary to the nature of customary

tenure, is followed by a forfeiture to the lord. A copyhold estate may also be forfeited by waste; as by cutting down timber, or opening mines, when such acts are not warranted by the custom. In the absence of such special custom, the general rule seems to be that the right of property both in trees and mines belongs to the lord; but neither can the lord without the consent of the tenant, nor the tenant without the license of the lord, cut down trees, or open and work new mines. Forfeiture may be incurred by an inclosure or other alteration of the boundaries of an estate, refusal to attend the customary courts, or to perform the services, or to pay the rent or fine incident to the tenure. The 9th section of the 1 Wm. IV. c. 65, protects infants, lunatics, and married women from the last-mentioned cause of forfeiture. In case of felony or treason being committed by a copyholder, the lord has the benefit of the forfeiture, unless it has been provided otherwise by act of parliament. He may waive the forfeiture by a subsequent act of recognition of the tenure. If he does not take advantage of the forfeiture for twenty years, his right to do so is barred by the act for the Limitation of Actions, 3 & 4 Wm. IV. The lord may also become entitled to a customary tenement by escheat for want of heirs. The 4 & 5 Wm. IV. c. 23, enacts that, where a trustee or mortgagee of lands of any tenure whatsoever dies without an heir, the Court of Chancery may appoint a person to convey or surrender the legal estate for the benefit of the persons entitled to the equitable interest in the property, and provides against the future escheat or forfeiture of lands by reason of the attainder or conviction of trustees or mortgagees who have no beneficial interest therein.

If the lord make a legal conveyance in fee-simple of a copyhold tenement to the tenant, the tenement is enfranchised, that is, converted into freehold.

There are no lands of a copyhold tenure in Ireland.

Still greater changes in the nature of estates of copyhold and customary tenure are gradually taking place under the provisions of the Stat. 4 & 5 Vict. c. 35, the principal objects of which are—1, the commutation of certain manorial rights in respect of lands of copyhold and customary tenure; 2, the facilitating of the enfranchisement of such lands; and 3, the improvement of such tenure.

There are numerous provisions in the act for defining boundaries, settling disputes, providing for cases of disability, payment of expenses, &c., similar to those in the Tithe Commutation Act, 6 & 7 Wm. IV. c. 71.

The act applies partially to the Duchy of Lancaster, but not otherwise to crown lands, and not at all to the Duchy of Cornwall.

COPYING MACHINES. The great value of a convenient and certain means of copying any piece of writing with perfect accuracy, and with less labour than is involved in the process of transcribing, has led to numerous inventions which may be classed under the general name of Copying Machines, some of which are extensively used in mercantile establishments for producing duplicates of letters, invoices, and other manuscript papers.

The most simple and obvious mode of effecting this object is by transferring, by means of a rolling or screw press, a portion of the ink with which a letter is written to the surface of a sheet of blank paper prepared to receive it by damping. The transfer thus obtained is of course the reverse of the original letter, and, unless it be taken on paper so thin and transparent that it may be read through it, it must be read backwards. Watt's copying-press was a contrivance for obtaining transfers of this kind upon thin unsized paper, wetted, and then placed between two woollen cloths, which absorbed all unnecessary moisture. Elegant screw presses of iron are manufactured for this purpose, some having the power applied solely by means of a screw, turned by a transverse bar or lever, or by a cross or wheel-shaped handle, while others have also a contrivance for increasing the pressure beyond what can be conveniently applied by the simple turning of the screw. The nature of such contrivances may be conceived from those described under SCREW-PRESS. In some cases, letters intended for transferring by the copying-press are written with an ink made for the purpose; and when common ink is used it may be thickened by adding a little sugar to it. Transfers are also taken from the pages of a manuscript book prepared for the purpose, a sheet of dry oiled paper being placed over the damp sheet to prevent the transmission of the moisture. It is almost needless to observe that transfers may be taken from several written sheets at one operation of the press.

Mechanical contrivances for enabling a person to write with two pens or pencils at once, on different sheets of paper, on the principle of the PANTOGRAPH, have been tried as copying-machines, but they are too complicated for ordinary use. All such machines, and perhaps even the copying press, are far surpassed in convenience by the *Manifold Writer*, an apparatus patented in 1806. In this apparatus a sheet of paper blackened on both sides with printers' ink, and dried for five or six weeks between sheets of blotting-paper, or covered with some other black composition which will come off when pressed hard, but will not move with a slight degree of pressure or friction, is laid between two sheets of thin writing-paper, and the whole is placed upon a smooth copper or pewter plate. The letter is then written firmly on the upper sheet of paper with an agate style or point, the pressure of which causes the blackened paper to produce two impressions of the writing, one, which is read through the paper, upon the under side of the sheet directly acted upon by the style, and the other upon the upper side of the lower sheet. More than two impressions of the writing may be obtained by using two or more sheets of blackened paper, interposed between several sheets of thin white paper. This apparatus is conveniently fitted up in a small portfolio, and occupies no more room than an ordinary writing-case.

COPYRIGHT, or, as it was formerly termed, Copy, has been defined by Lord Mansfield 'to signify an incorporeal right to the sole printing and publishing of somewhat intellectual, communicated

by letters.' By this 'somewhat intellectual' is to be understood something proceeding from the mind of the person by whom, or through whom, such a right is claimable. Translations and notes and additions to existing works are similarly protected. Further, a right of copy attaches to the authors of ideas expressed by other symbols as well as letters, to musical composers for example.

It has been supposed that a common-law right of copy existed in England previously to any statute on the subject. But it is unimportant whether this was so or not, for the statutes as to copyright have put an end to perpetual copyright, if it ever existed.

The universities of Cambridge and Oxford obtained from parliament, in 1775, an act for enabling those two universities in England, the four universities in Scotland, and the several colleges of Eton, Westminster, and Winchester, to hold in perpetuity their copyright in books given or bequeathed to the said universities and colleges for the advancement of useful learning and other purposes of education. A similar protection is extended to the University of Dublin by 41 Geo. III. c. 107.

The Act 5 & 6 Vict. c. 45 (Lord Mahon's Act), entitled 'An Act to amend the Law of Copyright,' and having for its preamble, 'Whereas it is expedient to amend the law relating to copyright, and to afford greater encouragement to the production of literary works of lasting benefit to the world,' is the act which now regulates literary property. It enacts that, in every book published in the lifetime of the author, after the passing of the act (1st of July, 1842), the author and his assigns shall have copyright for the term of the author's life, and for seven years after his death, or, if these seven years expire before the end of forty-two years from the time of publication, then for such period of forty-two years; while for books previously published, in which copyright still subsisted at the time of the passing of the act, the copyright should be continued for the full term provided in the cases of books thereafter published, except in cases where the copyright should belong wholly or in part to a person other than the author, 'who shall have acquired it for other consideration than that of natural love and affection.' In these excepted cases however, the author, or his personal representative, and the proprietor or proprietors of copyright, may agree, before the expiration of the subsisting term of copyright, to accept the benefits of the act: and, on a minute of such agreement being entered in a book of registry directed to be kept at Stationers' Hall, the copyright will be continued, as in other cases, for the author's life and seven years after his death, or for forty-two years from the time of publication, and will be the property of the person or persons specified in the minute. The copyright of a book published after the author's death is to endure for forty-two years from the time of publication, and to belong to the proprietor of the manuscript from which it is first published, and his assigns. With regard to encyclopædias, reviews, magazines, periodical works, or works published in a series of books or parts, or any book in which the publisher or projector shall have employed persons to write, on the terms that the copyright shall belong to himself, the copyright shall be in the publisher or projector, after he has paid for it, in the same manner and for the same term as is given to authors of books, except *only in the case of* essays, articles, or portions forming part of and first published in reviews, magazines, or other periodical works of a like nature, the right of publishing which separately shall revert to the authors at the end of twenty-eight years after publication, for the remainder of the term given by this act; and during these twenty-eight years the publisher or projector shall not have the right to publish any such essay, article, or portion separately, without the consent of the author or his assigns.

The act provides against the suppression of books of importance to the public, by empowering the judicial committee of the Privy Council, on complaint made to them that the proprietor of the copyright in any book, after the death of its author, refuses to republish or allow the republication of the same, to license the complainant to publish the book, in such manner and subject to such conditions as the Privy Council may think fit.

The remedies provided by this act for infringement of copyright are, an action for damages, and a power given to the officers of customs and excise to seize and destroy all foreign reprints of books in which copyright exists, with a penalty on the importer (if he be not the proprietor of the copyright) of 10*l.*, and double the value of every copy of any book imported, on conviction before two justices of the peace; 5*l.* of the penalty to go to the officer of customs or excise who shall procure the conviction, and the remainder to the proprietor of the copyright.

The act provides that a book of registry shall be kept at Stationers' Hall, where entries may be made of proprietorships of copyright, assignments thereof, licences of the judicial committee, and agreements as to copyrights subsisting at the time of the passing of the act, on payment in each case of a fee of 5*s.*

The 3 Will. IV. c. 15, entitled 'An Act to amend the Laws relating to Dramatic Literary Property,' after reciting the 54 Geo. 3. c. 156, provided that the author of any dramatic piece, not hitherto printed or published by authority of him or his assigns, should have as his property the sole liberty of representing it, or causing it to be represented, at any place of dramatic entertainment; and the author or assignees of any such work, printed and published within ten years before the date of the act, should have the same privilege, for twenty-eight years from publication, and for the remainder of the author's life, if he lived longer; the penalty for violating these enactments to be enforced by action for damages, with double costs, to be brought within twelve months from the commission of the offence. The 5 & 6 Vict. c. 45, has extended the term of the sole liberty of representing dramatic pieces to the period provided by that act for the copyright of books, and gives the same protection to the authors of musical pieces and their assigns. The remedies provided by the 3 Will. IV. c. 15, in the case of

dramatic pieces, are confirmed by the 5 & 6 Vict. c. 45, and extended to musical pieces. The 5 & 6 Vict. c. 45, also enacts that no assignment of the copyright of any book consisting of a dramatic piece or musical composition shall convey the right of representing or performing such dramatic piece or musical composition, unless an entry, expressing the intention that such right should pass by the assignment, be made in the registry book at Stationers' Hall.

There are certain works excepted from the benefit of the law of copyright. Such are, all publications injurious to morality, inimical to Christianity, or exciting to a breach of the peace.

A copy of every work, and of every second or subsequent edition which contains any additions or alterations, bound, sewed, or stitched together, and on the best paper on which the same shall be printed, must be delivered at the British Museum; and a copy of every work, or second or subsequent edition containing additions and alterations, on the paper of which the largest number of copies shall be printed for sale, in the like condition as the copies prepared for sale by the publisher, is to be delivered, if demanded, within twelve months after publication, within one month after demand made, at Stationers' Hall, for the Bodleian Library at Oxford, the Public Library at Cambridge, the Library of the Faculty of Advocates at Edinburgh, and the Library of Trinity College, Dublin, under certain penalties. Formerly, under the 54 Geo. III. c. 156, an author was obliged to give eleven copies of his work to public libraries. The 6 & 7 Will. IV. repealed the 54 Geo. III. c. 156, so far as related to the delivering of copies to the four universities of Scotland, Sion College, and the King's Inns, Dublin, and compensation was given to these institutions upon an estimate of the annual value of books supplied on an average of three years, ending the 30th of June, 1836.

The modes of legal proceeding to prevent or punish the infringement of copyright, or as it is more usually termed, piracy, are by action for damages; or more commonly by obtaining an injunction in equity to prohibit the unlawful publication. This is always granted where the legal title of the plaintiff to the work is made out, and the identity of the pirated publication with his own shown to the satisfaction of the court. The proof even of an equitable title has been held sufficient to entitle the plaintiff to this relief. (Mawman v. Tegg, 2 Russ. 385.)

The powers given by the 5 & 6 Vict. c. 45, have been exercised vigorously by the Custom-house authorities, and found very effectual to prevent the importation into this country of the French, Belgian, German, and American reprints of popular English works; but English authors still suffer by the circulation of these reprints abroad; and a practice so destructive of the fair profits of mental labour can only be effectually redressed by prevailing on foreign countries to extend the benefits of their own laws against literary piracy to aliens as well as native authors.

The 7 Vict. c. 12, entitled 'An Act to amend the law relating to International Copyright,' empowers her Majesty, by order in council, to enable authors of works first published in foreign countries to have copyright in the British dominions for books, prints, articles of sculpture, and the sole liberty of representing dramatic and musical pieces, for periods not exceeding those allowed by the various copyright acts for the respective classes of works when first published in this country, on conditions of registration and delivering of one copy at Stationers' Hall; but no such order in council is to have any effect unless it is stated therein, as ground for issuing the same, that reciprocal protection for British authors has been secured in the foreign country to which the order in council refers.

The chief statutes affecting the copyright in the arts of designing, engraving, and etching prints, are the 8 Geo. II. c. 13, which vests it in the inventor, designer, and proprietor, for fourteen years from the first publication, and enforces this provision against any person pirating the same by forfeiture of the plate and prints, and a fine of 5*s.* for each print, to be recovered by action within three months of the discovery of the offence. The 7 Geo. III. c. 38, extends the term of copyright to twenty-eight years, and, in addition to the subjects of the former statute, includes maps, charts, and plans under the same conditions. It also extends the time of bringing an action for the penalties to six months. The 17 Geo. III. c. 57, gives the owner of the copyright a further remedy of action for damages and double costs within the same limits of time. The 6 & 7 Will. IV. extends the provisions of the previous acts to Ireland.

With regard to models, casts, and other sculptures, the 38 Geo. III. c. 71, vests the right and property in these for fourteen years in the proprietor, and gives him a special action on the case against the offender, if brought within six months. These provisions were rendered more effectual by 54 Geo. III. c. 56, by which double costs were given, and an additional term of fourteen years superadded in case the maker should be living at the end of the first term.

With regard to designs for manufactured articles, the 27 Geo. III. c. 38, continued by 29 Geo. III. c. 19, and confirmed and made perpetual by 34 Geo. III. c. 23, gave the sole right of using a new pattern in the printing of linens, cottons, calicoes, and muslins for three months; and the 2 Vict. c. 13, extended this privilege to designs for printing other woven fabrics besides calicoes. The 2 Vict. c. 17, regulated copyright of designs in all articles except lace, and the articles to which the above-mentioned acts apply. But all these statutes were repealed by the 5 & 6 Vict. c. 100, which considerably extended the periods of copyright in designs.

The benefit of copyright of designs depends on registration before publication. Piracy is punished by a penalty of not less than 5*l.* nor more than 30*l.*, to be paid to the proprietor of the design, and to be recovered by an action of debt or for damages, or by summary proceeding before two justices.

The right of patents in many respects resembles that of copyright. [PATENT.]

The act 'for preventing the Publication of Lectures without Consent' (5 & 6 Wm. IV. c. 65) gives to authors of lectures the sole right and liberty of printing and publishing the same, and imposes a penalty on other persons, including printers and publishers of newspapers, who shall print, or publish, or sell them, without the author's leave. The act does not extend to lectures of the delivering of which notice in writing shall not have been given to two justices, living within five miles of the place, two days at least before their delivery, or to any lecture delivered in any university, or public school or college, or any public foundation, or by individuals in virtue of any gift, endowment, or foundation. The act does not extend to sermons.

COQUIMBITE (*Sulphated Peroxide of Iron*) occurs in granular masses, some parts of which are crystallised. Entirely soluble in water. Colour white, and also of various shades of brown, yellow, red, and sometimes even of a deep blue colour. Found in the southern part of Peru. Sulphuric acid, 43.55; peroxide of iron, 25.21; alumina, 0.78; lime, 0.14; magnesia, 0.21; silica, 0.37; water, 29.98.

COQUIMBO. [Chile.]

COR LEO'NIS. [Regulus.]

CORACI'NA, a genus separated from the *Crows* by Vieillot, and divided into four sections, namely—1, in which the species have the bill furnished at its base with velvety feathers (*Les Col-nus*); 2, in which the nostrils are covered with setaceous feathers directed forwards, and whose upper mandible is notched near the end (*Les Choucaris*); 3, in which the bill is naked at the base, and notched at the point (*Coracina*, Vieillot; *Gymnocephalus*, Cuvier); 4, of which the Plumed Umbrella Bird (*Cephalopterus ornatus*) is the only known example.

It is evident that Vieillot's genus *Coracina* constitutes a family (*Coracinidæ*), which however Mr. Swainson regards in the light of a sub-family of the *Corvidæ*, or Crows; and he aptly terms the birds Fruit-Crows. Lesson and others place them among the Chatterers (*Ampelidæ*); and Cuvier, who assigns to them a situation before the *Ampelidæ*, or, as he calls them, *Cotingas*, observes, that they have certain links of affinity with some of the Fly-Catchers.

The Fruit-Crows are arboreal in their habits, feeding chiefly upon berries. The beak is depressed, smooth, angular above, and slightly curved at the point; the lower mandible is a little flattened. As illustrations of Vieillot's forms, we may select the following species :—

1. *Head and neck feathered.*

The Scaled Fruit-Crow (*Coracina scutata*, Temm; *Piauhau à Gorge aurore* of the French). This beautiful bird is a native of Brazil; its general plumage is glossy black, with the exception of the throat and chest, which are of a fine rose-red. The *Piauhau ordinaire* (*C. rubricollis*) is an allied species

2. *A great portion of the head and face naked.*

The Bald Fruit-Crow (*Gymnocephalus calvus*, Geoffr.; *Le Choucas chauve*, Buffon; *Corvus calvus*, Lath.). This species, which equals a crow in size, in colour resembles Spanish snuff. The quills and the tail-feathers are black. The nakedness of the anterior part of the head, which gives so singular an appearance to this bird, is said by Vaillant, and also by Vieillot, to be a character peculiar only to the bird in its adult condition, the young being feathered to the beak. Lesson however affirms that he examined more than twenty skins at Rochfort, and in every instance the face was barren.—Locality, Guiana.

Bald Fruit-Crow (*Gymnocephalus calvus*).

3. *Neck naked.*

The Bare-Necked Fruit-Crow (*Gymnoderus fœtidus*; *Gracula nudicollis*, Shaw; *Gracula fœtida*, Linn.; *Col-nu*, Buff.). This bird equals a jackdaw in size, and the body is thick and fleshy. The sides of the neck are naked, with some traces of down. The upper part of the head, and back of the neck and throat, are covered with small close-set velvety feathers. Wing coverts, external edges of the middle quill-feathers, and the smaller quill-feathers, blueish gray; greater quills and tail-feathers, black, with blueish reflections. Rest of the plumage, black. Female smaller, and of a browner tint.—Locality, Brazil and Guiana.

4. *Head with a helmet-like plume; a lappet of feathers from the throat hangs over the chest; sides of the neck naked.*

The Umbrella Bird (*Cephalopterus ornatus*) is a rare species, remarkable for a crest extending from the beak (which it overshadows) to the back of the head, composed of straight elevated shafts terminated by an ear of black beards, which form a spreading top. The sides of the neck are naked; but long square-edged feathers, springing from the throat and anterior portion of the neck, form a sort of apron, or lappet, hanging before the breast. The plumage is jet black, with rich violet reflections, especially on the crest and chest plumes. Size, that of a jay.—Locality, Brazil; but Lesson states that a well-informed Portuguese informed him that the specimen in the Paris Museum (the only one, we believe, in Europe) was brought from Goa (Malabar). If so, we suspect that it must first have been taken there, and thence sent

Umbrella Bird (*Cephalopterus ornatus*).

to Lisbon, whence it was forwarded to M. Geoffroy St. Hilaire.

CORAL. [POLYPIARIA.]

CORAL FISHERY. Coral consists of the cells or habitations of minute animals, so built up as to form a tree-like structure. [POLYPIARIA.] Being beautiful in form and colour, it is sought after for purposes of ornament; and its fishery or gathering gives employment to many persons in the Red Sea, the Persian Gulf, the Mediterranean, and other places. In the Straits of Messina, the rocks which yield coral are from about 350 to 650 feet below the surface of the water. The coral here grows to about the height or length of twelve inches, and requires eight or ten years to come to perfection. In the general mode of fishing for coral, the instrument used consists of two heavy beams of wood, secured together at right angles, and loaded with stones to sink them. Hemp and netting are attached to the under side of the beams, to the middle of which is secured one end of a strong rope, by which the apparatus is let down from a boat, and guided to the spots where the coral is most abundant. The branching form of the coral causes it to become entangled in the hemp and network, by which means it is broken off from the rock, and drawn up with the apparatus to the surface of the water.

CORALLORHI'ZA, a genus belonging to the natural order *Orchideæ* and to the tribe *Malaxideæ*. One of the species, *C. innata*, is found in Great Britain in mountainous woods, but is a rare plant. There are several American species. They are exceedingly difficult of cultivation.

CORANTO. [COURANTE.]

CORBEIL. [SEINE-ET-OISE.]

CORBEL, a projecting piece of stone, wood, or iron, placed so as to support a weight of materials. Corbels are sometimes in the form of the modillion or mutule employed in entablatures, and also like the console of a window. The machicolations of towers are almost always supported on corbel stones, as may be observed in the old gates of Southampton, Canterbury, and York. In Norman architecture the cornice is supported by a

row of corbel stones, the ends of which are carved. In old English castles the main beams of the floors were frequently carried on large corbel stones, as at Porchester Castle. The term bracket is sometimes used for a corbel. Bracket however is better applied as synonymous with cantilever. Small wooden brackets often differ from corbels and cantilevers in being merely nailed to a perpendicular piece of wood and not having a bearing on a wall, as is always the case with corbels and cantilevers.

CORBET, RICHARD, was the son of a wealthy gardener at Ewell, in Surrey, whose professional skill and personal amiability are commemorated in verses of Ben Jonson. He was born in 1582, and received his education at Westminster School and at Christ Church, Oxford, of which he became dean. After taking orders, his talents, his social qualities, and his firm adherence to the High Church party gained for him, through the patronage of Buckingham, the place of chaplain to James I.; and he was afterwards elevated in succession to the bishopric of Oxford and to that of Norwich, each of which he held about three years. He died in possession of the latter see, in 1635. His only published writings are his poems. These were first collected in 1647, 12mo., under the title of 'Poetica Stromata;' they were reprinted in 1648 and 1672; and they were edited in 1807, 12mo., with a life of the author, by Octavius Gilchrist. They are, almost without exception, of a cast more or less ludicrous; and several of them are satires on the Puritans. They possess much merit in their class.

CORCY'RA. [CORFU.]

CORDAY D'ARMANS, MARIE ANNE CHARLOTTE, commonly called *Charlotte Corday*, who numbered among her ancestors the great tragedian Corneille (Lepau, 'Chefs d'Œuvre de Corneille'), and was of noble family, was born at St. Saturnin, near Seez, in Normandy, in 1768. The republican principles of the early revolutionists struck deep root in her enthusiastic mind, and on the overthrow and proscription of the Girondists, May 31, 1793, she determined to assassinate one of the principals of the dominant faction, and chose Marat, one of the most violent and bloody of the Jacobins, to be her victim. After two unsuccessful attempts, she obtained admission to the chamber in which he was confined by illness, July 15, under pretence of communicating important news from Caen, and stabbed him to the heart, while he was in his bath. He gave one cry and expired. She was arrested, tried, and condemned to be guillotined. She heard her sentence with perfect calmness, which she maintained to the last moment of life. Her beauty and animation of countenance, even during her passage to execution, added greatly to the interest inspired by her courage and loftiness of demeanour. She was guillotined July 17, 1793. There is a full account of her in Lamartine's *Histoire des Girondins*.

CORDELIERS, so named from wearing a knotted cord for a girdle, were the strictest branch of the Franciscan or Gray Friars. Chaucer mentions them in the 'Romant of the Rose,' l. 7461,

but they were not much known by this appellation in England.

CORDILLERAS. [ANDES.]

CORDIACEÆ, a small natural order of monopetalous Exogens, with a shrubby or arborescent habit, a gyrate inflorescence, and a drupaceous fruit. The only economical plants contained in it are the Sebesten Plums, the produce of *Cordia myxa* and *C. sebestena*, the rind of which is succulent and mucilaginous. All the species are tropical.

CORDON, a term used to denote a line of military posts, or sentries, placed around a district or town to prevent any communication between it and the country beyond. It is chiefly resorted to in cases of any contagious disease having broken out in a place, when it is called a *Cordon Sanitaire;* and, in order to be effectual, each sentry ought to be able to see his two next comrades right and left. This can be done in the day-time, at considerable distances, by taking advantage of commanding positions or open grounds; but at night the sentries must necessarily be more numerous and nearer each other.

COR'DOVA, or CO'RDOBA (*Corduba, Colonia Patricia,* and simply *Patricia*), was the birthplace of the two Senecas and Lucan. Under the Moorish caliphs it became and continued to be a great seat of learning from 755 to 1234, when Ferdinand III. of Castile took it. In the 10th century it is said to have contained nearly 1,000,000 inhabitants, 300 mosques, 900 baths, and 300 inns. The only monument of the Moors is the great mosque which is now transformed into a cathedral. Cordova was the centre of an extensive trade, and noted for the preparation of the goat-skins called *cordoban* (cordovan). Cordova at present contains only 57,000 inhabitants within its vast Roman and Moorish inclosure. The Plaza Mayor, or great square, is remarkable for its size, regularity, and neat piazzas. The bishop's palace is a massive building. That of the Moorish kings is now turned into stables for stallions of the renowned Cordovese breed. The town is situated on the right bank of the Guadalquivir, at the commencement of the finest plain of Andalucia, and on a gentle declivity which descends from the Sierra Morena. The climate is healthy and delightful, and the soil in the vicinity is extremely fertile. Cordova is 75 miles N.E. of Seville, in 37° 52′ N. lat., 4° 45′ W. long. The Guadalquivir is crossed by a fine marble bridge at Alcolea, a short distance from the city. (Laborde, *View of Spain;* Gibbon's *Rome;* Miñano, *Diccionario Geografico.*)

CORDWAINERS, originally Cordouanniers, a word derived from Cordoban, the soft tanned leather used for the upper part of shoes, which was first brought from Cordova in Spain, where it was manufactured by the Moors.

COREA, is a large peninsula on the eastern coast of Asia, the sovereign of which is tributary to the emperors of China and Japan, but otherwise it is independent. It is bounded N. by Mandshooria, E. by the Sea of Japan, S. by the Strait of Corea, and W. by the Hoang-Hai, or Yellow Sea, which separates it from China Proper. It lies between 34° and 43° N. lat., and 124° and 134 E. long. The length is about 420 miles, and the breadth from 100 to 200.

Corea appears to be a very mountainous country. The Chang-pe-shan, a mountain range, separates it from Manchooria, and minor ridges branch out from this. There are two considerable rivers, the Thumen-Kiang and the Yalu-Kiang, and several of smaller size. The coasts are for the most part high and bold. Near the coasts are numerous groups of small islands, among which are Amherst's Isles, James Hall's Archipelago, and the Corean Archipelago.

Corea is a very cold country, the largest rivers being frozen in winter. Among the agricultural produce of the peninsula, rice, cotton, silk, hemp, and tobacco are the chief. Horses and cattle are plentiful. Gold, silver, iron, salt, and coals are among the mineral produce.

The inhabitants are of the Mongol race, and resemble the Chinese and Japanese, but they are taller and stouter. Among them are some whose appearance seems to indicate a different origin. They speak a language different from the Chinese and Manchoo, though it contains many Chinese words. They have also a different mode of writing it, though the Chinese characters are in general use among the upper classes. In manner and civilisation they much resemble the Chinese, and are likewise Buddhists. Education is highly valued, especially among the upper classes. They seem to have a rich literature of their own, but their language is very imperfectly known in Europe. The only two towns whose names seem to be known to Europeans are King-ki-tao, a few miles north of the river Han-kiang, and Kingtsheou, at the bottom of the Bay of Fushan. The Coreans have acquired some skill in the manufacture of cotton cloth, cotton paper, silk goods, mats, swords, and iron goods.

No country is less accessible to Europeans than Corea. They are not permitted to remain even a few days on any part of the coast. It is not well known what is the reason of this policy, but it seems that the mutual jealousy of the neighbouring Chinese and Japanese holds the king in great subjection. The commerce of the country is accordingly limited to China and Japan; and even with these countries it is subject to many restrictions. We know nothing of the political condition of the country, except what is communicated by Klaproth from the Japanese geographer Rinsifee; and Ritter thinks that little reliance can be placed on those details.

(Broughton; Maxwell, in Ellis's *Journal of Lord Amherst's Embassy;* Mac Leod; Basil Hall; Ritter's *Asien.*)

CORELLI, ARCA'NGELO, was born at Fusignano, in the Bolognese territory, in 1653. He studied counterpoint under Simonelli, and the violin under Bassani. In 1680 he went to Germany, where he was received with extraordinary honours. He returned to Rome in 1682, and between that date and 1694 he published four series of Sonatas for two Violins and a Base. He superintended a grand musical festival at Rome, in 1686, which led to his being placed at the head of the Italian Opera. Soon afterwards he was in-

troduced to Handel, and the two great musicians had an opportunity of comparing their respective styles. Corelli was more distinguished for purity of taste than for dexterity in execution. His greatest work, the 'Concerti Grossi,' or Twelve Concertos, were written many years before they appeared in print. They were engraved in score at Amsterdam, and published shortly before his death, which took place in 1713. He was buried in the church of Santa Maria della Rotunda (the ancient Pantheon), at Rome.

Corelli's best Sonatas and Concertos are imperishable works. But the great composer suffered his life to be embittered, and his days shortened, by over-sensitiveness at the success of Valentini and others, whom he knew to be his inferiors.

CORE'NZIO, BELLISA'RIO (Cavaliere), a Greek, and a celebrated painter. He was five years the pupil of Tintoretto at Venice, and settled in Naples about 1590. Here he obtained a complete ascendancy, which he accomplished partly by his ability, partly by dissimulation, and partly by violence. He associated with himself Ribera and Carraccioli, and these three succeeded in driving from Naples Guido Reni, Annibal Carracci, Cesari, and others. Domenichino is said to have been poisoned by them, and it is related of Corenzio that he poisoned with his own hand his most able scholar Luigi Rodrigo.

Corenzio, though not to be compared with Tintoretto, possessed nearly equal boldness of manner and facility of execution, and he was also little inferior to him in invention. He was an able colourist in oil, but he took little pleasure in that style; his ambition was to paint great works in fresco, and he executed many at Naples. He died in 1643, at an advanced age: he was repairing one of his frescoes, when he fell from the scaffolding and was killed.

(Dominici, *Vite dei Pittori*, &c.; Lanzi, *Storia Pittorica*, &c.)

CORFU, the ancient *Corcyra*, an island off the coast of Epirus, from which it is separated by an irregular channel, lies between 39° 22′ and 39° 51′ N. lat., and between 19° 36′ and 20° 8′ E. long. Its greatest length is 38 miles, and greatest breadth 20. The area is 227 square miles. The population is 66,000. The surface of the island is mountainous, especially in the north part. The highest point is about 1900 feet above the sea. The mountains are rocky and naked, but the valleys are fertile, and watered by many streamlets, which however are mostly dry in summer. The island produces oil, wine, cotton, fruit, flax, corn, and pulse. There are few timber-trees. The live-stock consists of horses, horned cattle, sheep, and pigs. Oil forms the principal article of exportation, the annual produce being 185,600 barrels. Salt is made in considerable quantity in the salt-marshes, which communicate with the sea.

The island is divided into seven cantons, namely Corfu, Liapades, Peretia, Agrafus, Spagus, Strongili, and Milichia. Corfu contains the town of Corfu, which is the capital of the island and of the whole Ionian Islands. The town consists of three parts—the citadel, the town, and the suburbs. It contains two strong castles; the palace of the governor; an arsenal and barracks; several churches; and a university. The town is surrounded by walls and ramparts. The population is about 16,000. The principal towns in the other cantons are Liapades (2500 inhabitants), Chorachiana (2000), Peretia, Cassopo, and Agrafus. There are good harbours at Corfu, San Nicolo, and Affiona.

The oldest known inhabitants of Corfu were Phæacians. The Corinthians formed a colony on the island, and built the town of Corcyra. The Corcyræans joined with Athens against the Corinthians during the Peloponnesian War. (Thucyd., i. 50—1.) After this, Corcyra was distracted by civil commotions between the aristocratic and democratic factions, the former being favourable to the Peloponnesian or Spartan alliance, and the latter to the Athenian. About two centuries later, Corcyra was attacked by Illyrian pirates, who were driven out by the Romans. It belonged to the eastern empire till the 11th century, then to the Normans, then to the Latins, and then to the Angevins, who were expelled by the Venetians. The Venetians held the island from 1386 till the time of Bonaparte, when it passed into the hands of the French. In 1799 Russia and Turkey drove out the French, and formed the republic of the Ionian Islands, of which Corcyra or Corfu was made the chief. By the peace of Tilsit, Russia gave up the seven islands to the French. The English however took all the islands except Corfu, which was given up by France by the peace of Paris in 1814. The seven islands were then restored to their independence, and formed into a state under the protection of the King of Great Britain, represented by a lord high commissioner, who resides at Corfu. [IONIAN ISLANDS.]

(Strabo, Casaub., 269; Thucyd., i. and iv.; Polyb., ii. 1; Livy, xxvi. 24; Marmora, *Istoria di Corfu*; Neigebaur, *Ionische Inseln*.)

CORIA'NDRUM SATI'VUM or common *Coriander*, is an annual umbelliferous plant, inhabiting the southern parts of Europe, and yielding a globular dry fruit, with slight carminative stomachic properties and a powerful smell.

Coriander fruit, or seeds as they are incorrectly called, are used in sweetmeats, in certain stomachic liqueurs, and in some countries in cookery.

CORIARIA'CEÆ, a very small natural order of gynobasic polypetalous Exogens. The only plant that gives the order any interest is *Coriaria myrtifolia*, a shrub inhabiting the south of Europe, and employed by dyers for staining black. Its fruit is succulent, and said to be poisonous.

CORINNA, a Greek lyric poetess, was born at Tanagra in Bœotia. As she resided during some period of her life at Thebes, she is sometimes called a Theban. She lived about B.C. 500, as we must infer from the persons with whom she was connected, and was a woman of great beauty. She is said to have been a disciple of the poetess Myrtis, and to have herself instructed Pindar in his youth, but afterwards to have contended with him in poetical contests, and to have gained five victories over him. Her poems were collected,

and divided (probably by the grammarians) into five books, and in addition to this collection we have mention of epigrams by her. Only a few fragments of the poems of Corinna are extant, and they scarcely enable us to form an idea of their merit. Her reputation however is attested by the statues which were erected to her in several towns of Greece, and by the prominent place which the Alexandrine critics assigned to her among the lyric poetesses. She wrote in the Æolic dialect, which however was interspersed with many Bœotian peculiarities. The fragments of Corinna's poems are collected in Th. Bergk's 'Poetae Lyrici Graeci,' p. 811, &c.

CORINTH, a city of ancient Greece, the capital of a small district in the Peloponnesus. The Corinthian territory was bounded on the north by the Crissæan Bay, on the north-east by Mégaris, on the east by the Saronic Bay, on the south by Argolis, and on the west by the territories of Sicyon. The city was built upon a level to the north of a steep and high mountain called the Acrocorinthus, which served as a citadel, and was included within the wall. Corinth had two ports; the nearer, Lechæum, on the Crissæan Bay, was connected with the city by two parallel walls, which were partially destroyed by the Lacedæmonians, B.C. 393. The other port, Cenchreiæ, was on the Saronic Bay. A few miles to the north of Cenchreiæ was a small bay, called Schœnus. Here was the narrowest part of the isthmus, and a kind of canal called the Diholcus, of which there are still some remains, was carried from the harbour of Schœnus to the eastern extremity of Port Lechæum, and ships were run ashore at one of these points, and dragged to the other sea. A little to the south of the Diholcus was a wall, which was always guarded when any danger threatened the Peloponnesus. The old name of Corinth was Ephyra.

The descendants of Aletes, one of the Heraclidæ, ruled Corinth for five generations with royal power; but at length a rigid oligarchy was substituted for the monarchical form of government. In B.C. 660, Cypselus, an opulent citizen, of Æolian descent, putting himself at the head of the lower orders, overthrew the oligarchy, and assumed the sovereign power. Although he taxed and oppressed the Dorian caste so much that many of them were obliged to emigrate, he possessed the full confidence of the great mass of the citizens, and reigned without a body-guard. His son Periander, who succeeded to his authority, was much more despotic; he had a body-guard of 300 men, and trampled upon the rights of his countrymen. His reputation for practical wisdom procured him a place among the seven sages of Greece. Upon his death in 579 B.C., his power devolved to one of his relatives, Psammétichus, the son of Gordias, who after three years was deposed by the Lacedæmonians. The former constitution was then restored, but doubtless much modified, and Corinth remained an oligarchical state till the beginning of the fourth century B.C. In the Peloponnesian War, the Corinthians were stanch supporters of the Lacedæmonians. Like the other states of Greece, Corinth felt the influence of the Macedonian power, and was garrisoned by Macedonians under Antigonus, but was liberated by Aratus. The Corinthians took the lead in the Achæan confederacy, and were at first allies of the Romans; but at last the temptations held out by the wealth of the place, and the pretext furnished by some insults which the Corinthians had offered to the Roman embassy, led to the destruction and plunder of the town by L. Mummius, in 146 B.C. Many works of art were destroyed, but some of the finest pictures and statues were removed to Rome. Corinth was restored by Julius Cæsar about 100 years after its conquest by Mummius, and peopled with freedmen, who enjoyed the privileges of a Colonia. There remains little of Corinth except the ruins of an ancient Doric temple. Corinth sent out numerous colonies, and was a great emporium of trade. The winged Pegasus appears on the coins of Corinth and some of its colonies.

Coin of Corinth. Brit. Museum. Silver.

CORINTHIAN ORDER. [CIVIL ARCHITECTURE.]

CORINTHIANS, ST. PAUL'S TWO EPISTLES TO THE. The first Epistle of St. Paul to the Gentile and Jewish converts to Christianity in the city of Corinth is generally considered by the commentators and critics to have been written A.D. 57 or 58. The place from which it was written is stated in the concluding postscript to be Philippi, which, as it apparently contradicts the apostle's statement in verse 8, 'I shall remain in Ephesus until Pentecost,' the latter place is commonly given as the more probable; especially as these postscripts appear to be in other instances erroneous, and without authority. It is generally agreed that the second epistle was written A.D. 58, about a year after the first, and from Philippi, as the postscript asserts.

CORIOLA'NO, the name of three celebrated engravers, chiefly in wood, in chiaroscuro.

Cristoforo Coriolano appears to have been a German and a native of Nürnberg. He cut, besides many other works, the very clever portraits of the second edition of Vasari, which was published at Florence in 1568. He died, according to Doppelmayr, in Venice, in 1600.

Giambattista Coriolano was born at Bologna, and is supposed to have been the son of Cristoforo, but from the dates upon his works, 1619-1625, that of grandson is a more probable relationship: he died in 1649. His cuts in wood are very few: his works consist chiefly of engravings and etchings on copper, of which Bartsch describes 228, among which are several after the Carracci and other celebrated Bolognese painters.

The most celebrated of this name was the

Cavaliere *Bartolomeo Coriolano*, who is likewise said to have been the son of Cristoforo; but the statement in this case is still more doubtful than in that of Giambattista, for the earliest date on his works is that of 1627, twenty-seven years after the death of his reputed father.

He was one of the best of the Italian wood-engravers, and he has executed some very effective prints in chiaroscuro, after Guido and the Carracci; some with three and some with two blocks. The Fall of the Giants, after Guido, 1638, is one of his principal works.

(Doppelmayr, *Historische Nachricht*, &c.; Gandellini, *Notizie Istoriche dell' Intagliatori*, &c.; Bartsch, *Peintre Graveur*; Brulliot, *Dictionnaire des Monogrammes*, &c.)

CORIOLA'NUS, CNÆUS MA'RCIUS. The story of Coriolanus, as given by the Roman historians, is so poetical in its form, and so rhetorical in its details, that Niebuhr ('Hist. of Rome,' ii. p. 242, English Trans.) is of opinion that almost the whole of it must be excluded from history. The tale however runs as follows:—

Coriolanus was in the Roman camp when the consul Cominius was laying siege to Corioli. The besieged, making a vigorous sally, drove back the Romans to their camp; but Coriolanus immediately rallied them, rushed through the gates, and took the place. Meanwhile the Antiátes had come to relieve the town, but Coriolanus completely defeated them. From this time he was greatly admired for his warlike abilities, but his haughty demeanour gave offence to the commonalty. Not long afterwards he was refused the consulship; and on the occasion of a famine in the city, when corn was brought from Sicily, and a debate arose whether it should be given or sold to the plebs, Coriolanus advised that it should be sold. The people would have torn him to pieces, if the tribunes had not summoned him to take his trial. He was banished, and retired to Antium, the chief town of the Volsci, where the king, Attius Tullius, received him with great hospitality. Coriolanus promised the Volsci his aid in their war against Rome, and they appointed him their general. He took many towns; and at last he directed his march to Rome, and pitched his camp a few miles from the city, where he dictated to the Romans the terms of cessation of hostilities. He demanded that the lands taken from the Volsci should be restored, that the colonies settled there should be recalled, and that the whole people should be received as allies and citizens with equal rights; and that all those who had enlisted themselves under his banners should be recalled as well as himself. Coriolanus allowed them two terms, one of thirty and the other of three days, for making up their minds. After thirty days had expired, a deputation of four leading senators came, but were repulsed.

On the second day the priests and augurs came in their official garb and implored him, but in vain. On the third day, the noblest matrons of the city, led by Veturia, the mother of Coriolanus, and his wife Volumnia, who held her little children by the hand, came to his tent. Their lamentations prevailed; and, addressing his mother, he said with a flood of tears, 'Take then thy country instead of me, since this is thy choice.' The embassy departed; and, dismissing his forces, Coriolanus returned and lived among the Volsci to a great age. According to another account he was murdered by some of the Volsci, who were indignant at his withdrawing from the attack.

After his death the Roman women wore mourning for him. The public gratitude for the patriotic services of Volumnia was acknowledged by a temple, which was erected to Female Fortune. Shakspere has founded his play of 'Coriolanus' on certain parts of the legend.

(Dionysius Halicarnassensis, viii.; Plutarch, *Life of Coriolanus*; Livius, ii. 33–40; Florus i., 11; Niebuhr's *Hist. of Rome*, vol. iii. pp. 234—243.)

CORK. [BARK.]

CORK, a maritime county in the province of Munster, in Ireland, is bounded N. by Limerick, E. by Tipperary and Waterford, W. by Kerry, and S. by the Atlantic Ocean. The greatest length from E. to W. is 110 miles; the greatest breadth from N. to S. is 70 miles. The area is 2885 square miles, or 1,846,333 acres, of which 1,308,882 acres are arable, 465,889 uncultivated, 52,180 in plantations, 6515 in towns, and 12,867 under water. The population in 1841 was 773,398, of whom 683,919 were in the rural district, and 89,479 in the civic district, exclusive of the city of Cork.

A mountain ridge separates Cork from Kerry; and offsets from this ridge form the Muskerry, Boggra, Nagles, and Shehy mountain groups. Three nearly parallel depressions, running nearly east and west, form the basins or valleys of the rivers Blackwater, Lee, and Bandon. The bogs and waste lands lie chiefly among the mountain groups.

The Blackwater, one of the most beautiful of all the rivers of Ireland, rises on the confines of Cork and Kerry, and flowing eastward by Mallow, Fermoy, and Lismore, turns southward, and falls into the sea at Youghal Harbour. The Lee has its source in a small lake in the county of Cork, and, flowing eastward past Macroom to Cork, turns southward, and forms the æstuary of the Lee, in which is Cork Harbour. The Bandon rises in the mountains of Carberry, in the county of Cork, and falls into the sea at Kinsale Harbour.

The coast is well provided with harbours. That of Cork is one of the finest in the British Islands: the largest vessels can enter at any time of the tide without striking sail. The other harbours and anchorage grounds are at Youghal, Ring Point, Kinsale, Courtmasherry, Cloghnakilty, Glandore, Castlehaven, Baltimore Bay, and Bantry Bay.

The internal navigation of Cork is confined to the rivers; there are no canals. Until 1823 many parts of the country were almost inaccessible and unknown, owing to the want of roads; but the government since that time have expended considerable sums in the construction of excellent roads in various directions. The Great Southern and Western Railway extends through the county nearly from N.E. to S.W. Other lines have obtained parliamentary sanction from Cork to

Waterford, from Cork to Passage, from Cork to Bandon, and from Mallow to Killarney.

From the east of Limerick and south of Tipperary the limestone field extends towards the Blackwater, which it skirts for a part of its course on both sides between Mallow and Fermoy, until overlaid by the shale and sandstone beds of the Munster coal district, which occupy the whole extent of the uncultivated country. The limestone occurs in several other spots. Some of the rocky groups are slate-clay, and others sandstone. There are a few peaks of quartz formation, containing ores of iron, copper, lead, and manganese. The soil in the eastern parts of the valleys of the Lee and the Blackwater is good, and the agriculture skilful; but in most other parts of the county husbandry is in a very low state. The climate is moist, but genial.

The principal copper-mines in Ireland are situated at Allahies, about 10 miles west of Skibbereen. They were first worked in 1814. The ore contains from 55 to 65 per cent. of copper. In the same neighbourhood the ashes of a bog impregnated with copper yielded a considerable return until burned out. A deposit of manganese is worked with good profit on the same coast. Veins of sulphate of barytes occur in the neighbourhood of Bantry, and specimens of asbestos have been procured at Beerhaven. The iron-ore is abundant, and when timber was plentiful, many iron-works were carried on. There is good anthracite coal in the Blackwater district; but it is so difficult of access, that it has not yet been made available for the smelting of iron. The principal trade of the county is the export of agricultural produce, such as grain and butter. The linen and woollen manufactures at one time flourished in several towns of this county; but trade in these branches has for many years back been languishing.

Cork is divided into 23 baronies, and, by 4 Geo. IV. c. 93, for the purpose of holding general sessions of the peace, and no other, is divided into the East Riding and West Riding. Two members are returned to the House of Commons for the county of Cork, two for the city of Cork, and one each for the boroughs of Bandon, Kinsale, Mallow, and Youghal. The bishopric of Cork and Ross is now united with that of Cloyne, and comprehends the county of Cork. [BISHOPRIC.]

The following are the principal towns, with the population of each in 1841:—

Bandon, a market-town and parliamentary borough, is situated on the river Bandon, 19 miles S.S.W. from Cork. It is a well-built town. There are a few manufactures of woollens, cottons, whisky, leather, and flour, and a limited trade is carried on by means of the river, which is navigable for barges to Innishannon, 4 miles from Bandon. Population, including the suburb of Roundhill, 9303. The parliamentary borough returns one member to the House of Commons. Population, 8275.

Bantry is situated at the head of Bantry Bay. The harbour is large, safe, and commodious, but is little used except for the fishery and the export of corn and other agricultural produce. The town consists principally of two streets leading to the Bay. Population, 4082.

Charleville is situated on the great road from Limerick to Cork. It has a considerable retail trade connected with the supply of the surrounding country. Population, 4287.

Cloghnakilty is situated at the head of the Bay of Cloghnakilty, 31 miles S.S.W. from Cork. There is such an accumulation of sand at the mouth of the channel that only small vessels can reach the quay, whence corn and potatoes are shipped for Dublin. The linen trade has declined, and the Linen-Hall, built some years ago, is consequently of little use. Population, 3993.

Cloyne is a small ancient town, situated in the limestone plain which extends from Cork Harbour to Ballycotton Bay. The bishopric of Cloyne is now united with Cork and Ross. The cathedral is an old Gothic building used as the parish church. Near the cathedral stands the ancient Round Tower of Cloyne. Population of the town, 2200.

Cork is a city and the capital of the county. [CORK.]

Cove is a town of small size, situated on an island; but the harbour, which is in the æstuary of the river Lee, about nine miles below Cork, is the principal harbour of that city. [CORK.] Cove in summer is a favourite bathing place. The town is well built, and contains several public buildings and numerous taverns. Population, 5142.

Doneraile is situated on the Awbeg, a tributary of the Blackwater, in the midst of a beautiful country. Population, 2722.

Dunmanway is situated in a level tract surrounded by rocky hills, whence flow the streams which by their union form the river Bandon. Dunmanway is 17 miles W. from Bandon. Population, 3086.

Fermoy is situated on both sides of the Blackwater, but the larger part is on the south bank, where the principal business is carried on. On the north bank are extensive infantry barracks, which formed two large quadrangles, but the western quadrangle has within these few years been converted into a union workhouse. The town is regularly laid out, and contains several good streets; a court-house; church; Roman Catholic and other chapels; and numerous schools. There are several large flour-mills on the Blackwater. Fermoy is about 20 miles N.N.E. from Cork. Population, 6379.

Kanturk is pleasantly situated at the confluence of the Allua and Dallua, whose united streams flow into the Blackwater two miles below the town. The town has been much improved of late years. Population, 4388.

Kinsale is situated on the left bank of the æstuary of the river Bandon, in which is formed Kinsale Harbour, which is two miles long, with an average width of half a mile; it is safe for every kind of vessel, but, from its proximity to Cork, has little trade, except from its fishery. The town is built on the acclivity of a hill, and many of the streets are so steep as to be inaccessible to carriages. The parish church is an ancient conventual structure, and there is a large Roman

Catholic chapel; other chapels; a court-house; union workhouse; barracks, &c. Kinsale is a parliamentary borough, and returns one member to the House of Commons. Population, 6918.

Macroom is situated on the Sullane, which falls into the Lee on the north bank, a little below the town, 24 miles W. from Cork. There is a small but beautiful church, and a large Roman Catholic chapel. The outworks of the ancient castle have been removed, but the keep, a huge and strong pile of building, still remains. Population, 4794.

Mallow is situated on the north bank of the Blackwater, on the mail-coach road from Cork to Limerick, 21 miles N. by W. from Cork, and 43 miles S. from Limerick. The town has a good trade in agricultural produce, but no manufactures of consequence. It is resorted to in summer on account of its mineral springs. There is a court-house, market-house, union workhouse, a handsome church, Roman Catholic chapel, and chapels for Methodists and Presbyterians. Mallow is a parliamentary borough, and returns one member to the House of Commons. Population, 6851.

Middleton is situated on the Avanachora and Roxburgh, two streams which flow from the adjacent highlands, propel the machinery of the flour mills in the vicinity of Middleton, and fall into a creek of the north-eastern end of the æstuary of the Lee. Vessels of 300 tons' burthen can come up to Bailick, half a mile below Middleton, where there are quays and stores; but Ballincurra, about a mile below Middleton, is the chief port, where goods are landed, and shipments of corn and other provisions are made. There is at Middleton a court-house, church, Roman Catholic chapel, and a well-conducted endowed grammar-school. Population, 4591.

Millstreet is a small town between Mallow and Killarney, situated on a stream which falls into the Blackwater about a mile north from the town. Population, 2162.

Mitchelstown is situated near the Galtee Mountains, 10 miles north from Fermoy. There is a considerable trade in agricultural produce at the weekly markets, besides the retail trade. The estate of the Earl of Kingston extends for several miles around Mitchelstown, and includes an area of more than 120,000 acres, of which little is under improved culture. The splendid castle of the earl, and the extensive park watered by the Funchal, are in the immediate vicinity of Mitchelstown. Population, 4181.

Skibbereen is situated on the Ilen, which is navigable for vessels of 200 tons' burthen from Baltimore Harbour to within two miles of the town. It is a thriving place, with a good retail trade. The chief buildings are—a sessions-house, union workhouse, church, Roman Catholic chapel, Methodist chapel, and many schools. Skibbereen is 12 miles S. by E. from Bantry. Population, 4715.

Youghal, a seaport town and parliamentary borough, is situated on the western shore of the æstuary of the Blackwater, commonly called Youghal Bay. The town is very ancient; the houses are irregularly built, but generally of respectable appearance, though a few of the old houses are in a ruinous state. The nave and aisles of the church of an ancient collegiate establishment, founded in 1464 by the Earl of Desmond, have been fitted up as the parish church, in a style which cannot be commended. In the south transept are some fine monuments of the founder, the Earls of Cork, and others. Youghal formed part of the possessions of Sir Walter Raleigh, and the house in which he lived still remains, and has undergone little alteration. The Roman Catholic chapel is a large and handsome structure, with a beautiful spire. There are chapels for Methodists, Independents, and Quakers; a court-house, union workhouse, infirmary, fever hospital, several almshouses, and numerous schools. The harbour is safe and commodious, and at spring tides accessible to vessels of 500 tons' burthen. Agricultural produce is exported, and coals, timber, iron, and other articles for the supply of the town and neighbourhood, are imported. The borough returns one member to the House of Commons. Population, 9939.

History and Antiquities.—Before the coming of the English, Cork was a separate kingdom, of which the princes were the Mac-Carthys. The ancient kingdom of Cork included, besides the present county, a considerable tract in Kerry and Limerick. In 1172 Dermod Mac-Carthy, king of Cork, swore fealty to King Henry II., but he broke his engagements, and his kingdom was bestowed by King Henry, in 1177, on Robert Fitz-Stephen and Milo de Cogan. These possessions became afterwards much subdivided; but, in the course of three or four centuries, almost the whole county came into the hands of the Earls of Desmond. Many English families had settled in Cork after its conquest by Henry II.: but they were afterwards expelled by the Irish clans. In 1578, the Earl of Desmond joined Philip of Spain in raising the standard of revolt against Queen Elizabeth; but, after five years of hostilities, the rebellion was put down, and the earl's estates were divided among various English adventurers. By the beginning of the 17th century, a large portion of the county had come into the possession of Sir Richard Boyle, afterwards Earl of Cork; and he speedily effected more for it than any previous possessor had done, by procuring charters for many of the towns, and introducing English habits among his tenants. During the Rebellion of 1641, the Earl of Cork's tenantry formed an efficient militia in defence of the English. For the last two centuries the history of Cork has formed part of that of Ireland generally.

The antiquities are chiefly military, and comprise some of the finest buildings of the kind in Ireland. The castle of Kanturk, built by Mac Donogh, prince of Duhallow, is a square of 120 feet by 80, and about 70 feet in height. Lohort castle, built in King John's reign, is a massive keep, 83 feet high. Liscarrol Castle, of the same date, is an oblong of 120 by 240 feet. Blarney Castle, built by Cormack Mac-Carthy in 1449, is still a fine ruin, though only one-fourth of the original building is now standing: the walls are 18 feet thick. The other castles still standing in the county are very numerous, and of great historical interest.

The dioceses of Cork, Cloyne, and Ross, with which the county is nearly co-extensive, rank respectively 19th, 25th, and 21st, among the 32 Irish dioceses in point of education. The average of educated persons in the three dioceses is 6.8 per cent.

(Smith's *History of the County of Cork*, Dublin, 1750, and Cork, 1825; Townsend's *Statistical Survey of Cork*, Cork, 1815; Cox's *History of Ireland*; Frazer's *Hand-book for Ireland*; Thom's *Irish Almanac*, 1846; *Parliamentary Reports and Papers*.)

CORK, a city, municipal borough, parliamentary borough, and the assize town of the county of Cork, in Ireland, is situated in the county of the city of Cork, at the head of the æstuary of the river Lee, in 51° 53′ 39″ N. lat., 8° 20′ W. long., 158 miles S.W. from Dublin by the road, and about 11 miles from the sea. The population of the municipal borough in 1841 was 80,720, and the number of inhabited houses was 8773, which gives an average of 9.2 persons to a house.

The Lee, one mile above the city, divides itself into two branches, which, after being separated for about two miles, unite again below the city, and form the æstuary of the Lee. The island formed between the separation and junction of the river constitutes the principal portion of the city of Cork. The island is connected with the main land by several bridges, beyond which the suburbs have extended on both sides, and now form an important part of the city. Cork is thus divided into three parts. The ancient walled city occupied a portion of the island, the rest of which, being low, was marshy, and occasionally overflowed by floods and high tides. The whole has been gradually reclaimed, arched over, and a large part of it covered with streets. The principal portion of the city however occupies the flat land on the south side of the Lee, and contains the principal streets; the other portion is on the north side of the Lee, on hilly ground, which is divided by the valley of the Kiln stream. Cork extends about two miles from N. to S., and about one mile from E. to W.

The modern streets on the south side of the river are wide and well constructed, and the houses of late years have been built with more regularity and better taste than formerly. In the older parts of the central city, as well as many parts on the north side of the river, the streets and lanes are narrow, filthy, and ill-ventilated. Some of the bridges over both branches of the Lee are handsome structures.

The principal buildings are—the County Court-House, a handsome modern structure; the old County Court-House; the County Prison; the City Prison; the House of Correction; the Mansion-House; the Female Penitentiary, or Convict Depôt; General Dispensary; Fever Hospital; Foundling Hospital; North Infirmary and South Infirmary; the Lunatic Asylum, which accommodates upwards of 400 patients; Custom-House; Commercial Buildings; two small theatres; Cork Institution; the episcopal palace of the Bishop of Cork, Ross, and Cloyne; the Cathedral; 6 parish churches and 2 chapels of ease; 3 Roman Catholic chapels, 4 monasteries, and 2 nunneries, with a chapel attached to each; 2 Presbyterian chapels, 4 Methodist, 1 Baptist, 1 Independent, and 1 Quakers'. There are various literary and scientific institutions, and schools of medicine, anatomy, and surgery. The number of scholars in the general schools in 1841 was 11,677, of whom there were, in the rudimentary schools, 5702 males and 4817 females; in superior schools, 680 males and 468 females. The principal promenade, called the Mardyke, is on the western side of the town; it is a fine raised walk, a mile in length, and shaded by a double row of elms on each side. On the east side is the new cemetery, formerly the Botanic Garden.

The manufactures of Cork are of little importance compared with the trade and commerce. There are tanneries, iron-foundries, glass-houses, distilleries, and breweries. The export trade consists principally of grain, butter, and other provisions, and cattle; the import trade of timber and the various articles required for the use of the city and the surrounding neighbourhood. Steamers ply daily between Cork and the harbour at Cove; and large steamers trade regularly with Dublin, Belfast, Liverpool, Bristol, and Glasgow.

The principal harbour of Cork is at Cove, about 9 miles below the city, but lighters of 30 tons' burthen come up to Patrick's Bridge, on the north branch of the river, where there is a fine line of quays. Merchant-vessels unload into the lighters at Passage, about 6 miles down the river. The harbour of Cove is 3 miles long and 2 miles wide, completely sheltered, and protected by forts on various points. The entrance is 2 miles long and 1 mile wide. During the last French war, Cove harbour was the station of an admiral: 600 merchant-ships have been at anchor in it at once, and 400 have left it under convoy in one day. The total number of ships registered Jan. 1, 1847, was 523 (burthen 70,460 tons). The net customs duty for the year 1846 amounted to 288,045*l.* 17*s.* 10*d.* In the Coasting Trade, in 1846, the sailing vessels inwards were 2740 (207,991 tons); steam-vessels, 315 (115,247 tons); the sailing vessels, outwards, were 1742 (102,296 tons); steam-vessels, 394 (117,253 tons). In the Colonial and Foreign Trade, the sailing vessels, inwards, were 319 (63,035 tons); outwards 221 (50,261 tons). The colonial trade is chiefly with Canada; the foreign, with Portugal, the Baltic, and the Mediterranean.

The foundation of Cork is attributed to St. Finbar, to whom the cathedral is dedicated, who built a church and founded a conventual establishment there in the seventh century. Oliver Cromwell in 1650 converted the church bells into cannon.

CORMONTAINGNE (***) was a French engineer of the eighteenth century, who distinguished himself both by the services which he performed in the field, and by the improvements which he made in the art of fortification. He must have been born about the year 1692, for he died October 20, 1752, and he is said to have been then nearly sixty years of age: but it is remarkable that the circumstances of his early life, and even his baptismal name, have not been preserved.

The first notice which we have of him is that he was present at the siege of Friburg in 1713, and probably he then acted as an engineer, for three years afterwards he addressed a Memoir on Fortification to M. le Pelletier de Souzi, who at that time held the rank of Intendant Général des Fortifications in France. In 1734 he was appointed by the Comte, afterwards the Maréchal Duc de Bellisle, to direct the siege of Traerbach; and when the siege of Philipsburg was undertaken Cormontaingne was employed to superintend the operations.

In the year 1744 he conducted, in Flanders, the sieges of Menin, Ypres, La Knoque, and Furnes; and, in Germany, that of Friburg. Subsequently to that time he was employed in inspecting the fortifications of the kingdom, from the Rhone to Calais; and on this occasion, besides a general tract on the manner of fortifying the frontiers of a state, he wrote particular memoirs on the places of Franche Comté, Alsace, and the country between the Moselle and Calais. He was afterwards employed in superintending the constructions of new works at Strassburg, Metz, Bitche, and Thionville: at the last of these places he resided, with the rank of Maréchal de Camp, and here his useful life terminated.

Cormontaingne left in manuscript several 'Memorials' relating to Fortification, which were deposited in the Bureau de la Guerre. They were afterwards obtained from thence and published at Paris by M. Bayart, Capitaine de l'Ecole du Génie, in 3 vols. 8vo. The first is entitled 'Mémorial pour l'Attaque des Places,' 1806; the second, 'Mémorial pour la Défense des Places,' 1806; and the third, 'Mémorial pour les Fortifications Permanentes et Passagères,' 1809. An edition of the first of these works had been published by Bousmard at Berlin in 1803; and a work, under the title of 'Architecture Militaire,' which Cormontaingne had written, was printed at the Hague without his knowledge in 1741.

Cormontaingne did not profess to invent a system of fortification; but, by certain variations in the outline, and by additional works, he obviated some defects which are conceived to exist in the systems of Vauban. [FORTIFICATION.] The work on the attack of fortresses is said to have been composed during the sieges at which he served, from notes written in the trenches and on the breaches, even under the fire of the enemy.

(Bousmard, Preface to the *Mémorial pour l'Attaque des Places; Biographie Universelle.*)

CORMORANT. [PELECANIDÆ.]

CORN-LAWS and CORN-TRADE are intimately connected, as the laws were formed in an early period of our history to prevent corn being sent out of the country, and at a later period to prevent its being brought in. These laws however have at length been repealed, and from February 1849 only a nominal duty, for the purpose of registration, of 1*s.* per quarter on grain, and 4½*d.* per cwt. on meal, is to be levied; but at present the sliding-scale act of 1846 is in operation. The returns of the Corn-Trade are too voluminous for us to give at length; but we may state that importations of corn, to a larger or smaller extent, have been made for many years. We add a statement of the quantity of wheat and wheat-flour in quarters for the last few years.

	Imported.	Consumed.
1842	2,770,647	2,619,702
1843	3,040,269	2,977,302
1844	1,064,942	982,287
1845	1,381,977	1,026,976
1846	2,351,907	2,962,832

The quantity of grain of all kinds, and of flour and meal imported in 1845, the year preceding the repeal of the Corn Laws, in 1846, the year of their repeal, and in 1847, a year of famine, during which even the moderate duties under the new laws of 1846 were suspended, are as follows:—

	1845.	1846.	1847.
Grain of all kinds . .	Qrs. 2,162,644	Qrs. 3,814,666	Qrs. 9,437,034
Flour and meal	Cwts. 953,258	Cwts. 3,356,812	Cwts. 8,637,302

CORN-RENT is a money-rent varying in amount according to the fluctuations of the price of corn. In some countries rent is paid in the produce of the land itself; but in no part of the United Kingdom does this primitive custom exist. Some landlords in Ireland, indeed, for the accommodation of their tenants, agree to accept corn in payment of their rent, at the price of the nearest market, and ship it to England for sale; but the rent is calculated in money.

The corn-rent is founded upon the principle that a farm being assumed to grow, upon an average, a certain quantity of produce, the value of such proportion of that produce as may be agreed upon shall be paid to the landlord as rent. But, as the prices of all produce are liable to considerable variation, and as the profits arising from the land must generally be mainly dependent upon the prices for which the produce is sold, it is supposed to be equitable to the farmer that the money value of that portion of the produce which he pays as rent should be calculated so as to vary with prices, instead of being determined by any arbitrary or unvarying standard. And it is undeniable that with long leases a corn-rent is a security against the growth of any serious disproportion between the rent originally agreed upon and the actual value of the produce of the land. If the farmer, under the security of a long lease, lay out capital upon the land and thus increase the quantity of produce, he derives the entire benefit arising from increased production, as the quantity to be paid as rent has already been agreed upon; and he is secured against loss caused by a fall in prices, as the amount of his rent is governed by prices.

For the purpose of assessing a corn-rent, the average price of wheat alone, or of wheat and other grain, is taken—sometimes for the last year, and sometimes for a certain number of years. If the price for one year only be taken, the results to the farmer may be thus stated. When prices are low from a limited demand for produce, his rent is reduced; and when they are low, from increased production, his rent is still reduced, although he has more produce than usual to sell. When prices are high from an increased demand,

he has more rent to pay, but the remunerative prices enable him to pay it easily; but when an advance of prices is caused by scarcity, his rent is raised, while the high prices may be counterbalanced by the diminished quantity of produce which he has to sell. Thus in three cases out of four a corn-rent is favourable to the farmer; and even in the fourth case he is secured from loss by its favourable operation in other years. In some leases also a further advantage is given to him by fixing a maximum price: and thus, if prices should happen to rise beyond that point, he derives the whole profit accruing from the difference. Under this system of annual averages, so advantageous to the farmer, there is a certain degree of unfairness to the landlord, which is sometimes corrected by assessing rent upon the average price of different kinds of produce for a certain number of years; by which means a just proportion is maintained between the money-rent and the average annual value realised from the land. It is upon this principle that the tithe rent-charges are calculated, from the average price of grain for seven years [TITHES]; and corn-rents are sometimes regulated by the scale of average prices published annually for the purposes of the Tithe Commutation Act. In Wiltshire some farms are let in this manner, but their number is inconsiderable. The rent of grazing and dairy farms cannot be regulated by the ordinary system of corn-averages; but in some of the dairy-farms of Cheshire the rent is determined by the average price of wheat and of cheese. In many parts of the south of Scotland corn-rents are paid according to the *fiar* prices of corn, as determined in each county by a jury summoned by the sheriff for that purpose.

The principle of a corn-rent is by no means of recent origin; for by an act of 18 Elizabeth, § 6, it was required that in all future leases granted by the colleges in the universities of Oxford and Cambridge, and by the colleges of Winchester and Eton, one-third part, at least, of the old rent shall be reserved and paid in good wheat at 6*s*. 8*d*. the quarter or under, and good malt at 5*s*. the quarter or under: or shall be paid in ready money after the rate of the best wheat and malt sold at the nearest market.

(*Journal of the Royal Agricultural Society*, vol. v. p. 84, 177; see also Index to *Report on Agricultural Distress*, 1836.)

CORN-TRADE, ANCIENT. The production of corn, one of the chief necessaries of life, and its commercial exchange, have been a subject of the first importance in all ages.

The small and comparatively barren territory of Attica did not produce sufficient corn for the consumption of the inhabitants. Corn was brought into the Piraeus, the port of Athens, from the countries bordering on the Black Sea, Syria, Egypt, and other parts of Africa, and from Sicily. Demosthenes asserted (B.C. 355) that the Athenians imported more grain than any other people ('Against Leptines,' c. 9). But the trade in corn between Greece and the Black Sea was of some magnitude at a much earlier date. In B.C. 480, Xerxes, while at Abydos, on his way to the invasion of Greece, saw the corn-ships that were sailing from the Black Sea and through the Dardanelles and carrying corn to Peloponnesus and Ægina. (Herodotus, vii. 147.) Some parts of the country on the coast of the Black Sea now export grain, and probably have exported grain ever since the time of Xerxes.

The importation of grain into Attica was regulated by the State. The exportation of corn from Attica was forbidden; and only one-third of the foreign corn that was imported into the Piraeus could be re-exported to other countries: this law as to importation was enforced by the overseers of the harbour. Engrossing or the buying up of corn was a serious offence: a man could not purchase more than fifty loads. The amount of these loads cannot be exactly ascertained, nor is it material: the principle is clearly shown by the limitation. The penalty for violating this law was death.

To carry the laws as to the sale of corn into effect, the Athenians had Corn Wardens, who kept an account of the corn that was imported, inspected flour and bread, and saw that they were sold of the weight and at the price fixed by law. Various enactments were made with a view of securing a supply of corn; such as that no money should be lent on a vessel which did not bring back to Athens a return cargo of goods, among which corn was mentioned; and that no person living in Attica should import corn to any place except the port of Athens. The interests of individuals, and ultimately the real interests of the community, were thus set in opposition to the supposed interests of the State, and evasions of the laws are often spoken of. Individuals attempted, what they will always do, to sell their grain at the dearest market. (Xenophon, 'Œconom.,' c. 20.)

There were public corn-warehouses at Athens, in which corn was lodged that had been purchased at the expense of the State, and sometimes, as it appears, by private contributions. Officers were appointed to purchase the corn, and persons to give or measure it out. Corn so purchased was probably sold to the people at a low price, and sometimes also there were gratuitous distributions of it; as at Rome; and occasionally, as at Rome also, presents of grain were received from foreign princes or rich persons, and distributed among the people gratis.

This subject has been investigated by Boeckh, 'Public Economy of Athens,' translated by G. C. Lewis, 2nd edition, revised, 1842.

What we know of the ancient corn-trade of Italy mainly relates to the city of Rome. From an early period it was considered the business of the administration to see that the city was supplied with grain. An importation of corn from Sicily is mentioned by Livy (ii. 41) under the year B.C. 486. As the Romans extended their empire, and provincial governments were formed, such as those of Sicily and Sardinia, supplies of grain were got from foreign parts. After the conquest of Sicily, the proprietors were allowed to keep their lands on condition of paying a tenth of the produce to the Romans, according to the

system which had been established by King Hiero. Sardinia, after the conquest, paid the same. (Livy, xxxvi. 2.) The mode of proceeding, as to the tenths in Sicily, was this:—the cultivator gave notice of what quantity of land he intended to sow, and an entry was made of it. The Roman State took the tenth of the produce in kind, which the cultivator was bound to convey to some port in Sicily, where it was embarked for Rome. All the wheat produced by the tenths was entered in the public books, and it was all conveyed to Rome or to the armies which were serving in parts remote from Rome; this at least appears to have been the general rule.

Sometimes two-tenths of the produce were claimed by the Roman State (Livy, xxxvi. 2; xxxvii. 2), but in this case the second tenth was paid for out of the Roman Aerarium. Presents of grain from foreign states and princes were sometimes made to the Romans. (Plutarch, 'C. Gracchus,' c. 2.) Thus it appears that the State undertook to provide the chief supply of grain for the city: the grain was sometimes sold, and sometimes distributed gratis among the poor, a practice which became common under the late Republic. Besides these distributions of corn at the public expense, the wealthy Romans who sought popularity sometimes made like distributions of corn among the poorer citizens, as M. Crassus the Rich did in his consulship. (Plutarch, 'Crassus,' c. 2, 12.)

It does not appear, then, that the chief supply of corn for the city of Rome, during the Republic, was furnished in the regular way of trade. It was the business of the State to keep the proper supply of corn for the city in the public warehouses; but the supply was not always equal to the demand, and it also often happened that many people could not afford to pay the price. Scarcity was not uncommon both under the Republic and the Empire.

In Livy (iv. 12) we have a notice of the creation of a Praefectus Annonae, or Superintendent of Provision, L. Minucius, B.C. 440, in a season of scarcity. He exercised his office in an arbitrary manner, by compelling persons to state what corn they had in their possession, and to sell it; and he endeavoured to raise a popular clamour against the corn-dealers, if Frumentarii here means private dealers. Cn. Pompeius Magnus was intrusted with the superintendence of provision for five years. (Cicero, 'Ad Attic.,' iv. 1.) Augustus, at the urgent importunity of the people, took on himself the office of Praefectus Annonae, such as Pompeius held it. (Dion Cassius, liv. 1.)

Under the early Republic many parts of Italy were well cultivated, and Rome, as already observed, derived supplies of corn from various parts of the Peninsula. But the civil wars which devastated Italy near the close of the Republic were injurious to agriculture. Murder and proscription thinned the numbers of the people, and life and property were insecure. Many of the lands changed owners, and the property of those who were cut off by violence fell into the hands of others, and chiefly of the soldiers. These and other causes made Italy less productive about the time of the Christian æra than it had been some centuries earlier. Even under the peaceable administration of Augustus, 60,000,000 modii of wheat were annually imported into Italy and Rome from Egypt and the Roman province of Africa. (The modius is estimated at 1 gallon and 7.8576 pints, English measure.) But this did not prevent scarcity: there was a great famine at Rome in the latter part of the administration of Augustus. (Dion Cassius, lv. 26; Vell. Paterc., ii. 104; Suetonius, 'Augustus,' c. 42.) The general administration of Tiberius, the successor of Augustus, is commended by Tacitus ('Annal.,' iv. 6). He endeavoured to secure a proper supply of corn by intrusting to the Publicani the management of the tenths of grain from the provinces; but there was a great famine in his time, and the high price of grain almost caused an insurrection. The emperor showed that he had not neglected this important part of the administration: he published a list of the provinces from which corn was brought, and he proved that the importation was larger than in the time of Augustus. (Tacit. 'Annal.,' vi. 13.) Again, under the administration of the Emperor Claudius, a famine in Rome occurred. (Tacit. 'Annal.,' xii. 43.) Tacitus observes that during the scarcity Claudius was assailed with menaces while he was seated on the tribunal in the forum, and he only escaped by the aid of his soldiers. He adds that there were only fifteen days' provisions in the city; and 'formerly Italy used to export supplies for the legions to distant provinces; nor is Italy now barren, but men prefer cultivating Egypt and Africa, and the existence of the Roman people is intrusted to ships and the dangers of the sea.' Claudius subsequently paid great attention to the supplying of Rome with corn. Under Nero, the successor of Claudius, there was a famine at Rome. (Suetonius, 'Nero,' c. 45.)

The comparison of ancient and modern prices of grain is a difficult subject, and the results hitherto obtained are not satisfactory. It is also necessary to be careful in considering the circumstances when any prices are mentioned. P. Scipio on one occasion (B.C. 200) sent a great quantity of corn from Africa, which was sold to the people at four asses the modius. (Livy, xxxi. 4.) In the same book of Livy (c. 50) another sale is mentioned at the rate of two asses the modius. But on these, as on many other occasions, these prices were not the market-prices at which wheat would have sold, but they were the lower prices at which the State sold the grain in order to relieve the citizens. Rome, both under the Republic and the early Empire, often suffered from scarcity or from high prices of grain, which proves that there was not a steady trade and a regular market, for a demand of corn would have produced a supply. The chief supply of grain was provided by the State. That which is best left to private enterprise was undertaken by the government. It is true that the condition of Rome was peculiar under the late Republic and the Empire. The city was full of paupers, who required to be fed by occasional allowances of corn. The effect, however, of the State purchasing for the people was not a certain supply, but occasional scarcity.

Whether a State undertakes to buy for the people what they may want for their consumption, or regulates the trade by interfering with the supply, is immaterial as to the result. In either case the people may expect to be starved whenever corn is scarce.

The essay of Dureau de la Malle, 'De l'Economie Politique des Romains,' and the treatise of Vincentius Contarenus, 'De Frumentaria Romanorum Largitione,' in Grævius, 'Antiq. Rom. Thesaurus,' vol. viii., contain most of the facts relating to the supply of corn to Rome; and both have been used for this article.

CORNA'CEÆ, a small natural order of polypetalous exogenous plants cut off from *Caprifoliaceæ*, to which they were formerly referred. They consist principally of shrubs, very rarely of herbaceous plants.

Many of the species are cultivated in European gardens, especially *Cornus mas*, or Cornel-tree, *Cornus alba*, *C. sanguinea*, and *C. sericea*, called Dogwood, together with *Benthamia fragifera*. They are valued either for their bright red shoots, which in the winter are highly ornamental, or for their richly coloured fruit. *Benthamia fragifera*, in particular, has its drupes collected in roundish strawberry-like heads, which have a beautiful effect in the south-west of England, whither it has been some years introduced from the Himalaya Mountains. The bracts of some species of this order are very large, and resemble petals, and, being white, they are a gay substitute for the flowers themselves, which are small and inconspicuous. This is particularly the case with *Cornus herbacea*, *Cornus florida*, and *Benthamia fragifera*. Medicinally, cornaceous plants are of great importance. The American physicians esteem the bark of *Cornus florida* and *C. sericea* equal to Cinchona as a febrifuge.

CORNA'RO, LUIGI, or LEWIS, a Venetian nobleman, celebrated for the successful care he took of his health, by means of diet. He was originally of a weak constitution, and by the time he had attained mature manhood his intemperate indulgence in eating, drinking, and other pleasures had brought on so many disorders that life was a burden to him. He informs us, that from his thirty-fifth year to his fortieth he spent his nights and days in almost unremitted suffering. Having tried all other remedies in vain, his physicians earnestly recommended a more temperate course of life, and when he was forty he began gradually to diminish the quantity of his food, and to eat and drink nothing but what nature required. At first he found this severe regimen very disagreeable, but by adhering to a spare and simple diet he became a hale man within a year. From temperance he proceeded to abstemiousness, until at last the yolk of an egg was often considered sufficient for a meal. His health and spirits kept improving all the while, and, as for enjoyment in eating, he says he brought himself to relish dry bread much more than he had ever done the most exquisite dainties of the table. He recommended, by practice, exercise, riding on horseback, the sports of the field, and those gentle excitements derivable from fine scenery in the country. In his eighty-third year he wrote his treatise on 'The Advantages of a Temperate Life.' He subsequently added three other discourses on the same subject, the fourth and last being included in a letter to Barbaro, the patriarch of Aquileia, to whom he states that, though at the age of ninety-five, he is still in possession of health, vigour, and the perfect use of all his faculties.

Cornaro died at Padua in 1566, when, according to the best authorities, he was ninety-eight years old. His work was very frequently published in Italy, both in the vernacular tongue and in Latin. It has been translated into all the civilised languages of Europe, and was once a very popular book. There are several English translations of it, the best being one which bears the date of 1779.

CORNBRASH, a thin calcareous member of the oolitic formations. It constitutes the uppermost band of the Bath oolite formation, and is extremely rich in Echinodermata and Conchifera, but remarkably deficient in Belemnites.

CORNEA. [EYE.]

CORNEILLE, PIERRE, commonly called the father of the French drama, was born in the year 1606, at Rouen, where his father was an advocate. Pierre himself was destined for the bar, and had begun to practise in that profession, but with little success. A love incident furnished him with the plot of his first comedy 'Milete,' produced in 1629, which was followed by the dramas of 'Clitandre,' 'La Veuve,' 'La Galérie du Palais,' and 'La Place Royale,' all produced between that time and the year 1636.

In 1636 Corneille's fame rose at once to its height. M. Chalon had recommended him to study the Spanish dramatists, particularly Guillen de Castro; and it is on the 'Cid' of this author that the celebrated 'Cid' of Corneille was principally founded. This piece delighted the Parisians to enthusiasm; and they looked on it as a complete miracle. The author had before exhibited some tragic power in an earlier work called 'Medée,' but it is not till the production of the 'Cid' that we must look on him as 'le grand Corneille.'

Corneille, feeling himself hurt by an imputation cast upon his inventive powers, sought for a subject which should silence these aspersions of his enemies, and at last turned his attention to Roman history, from which he drew the plots of his tragedies 'Horace' and 'Cinna,' both produced in 1639. The former fully proves his ingenuity in moulding a complicated story out of scanty materials.

These were followed by 'Polyeucte,' which by some is reckoned his chef-d'œuvre. 'La Mort de Pompée' and 'Le Menteur' succeeded, and were followed by a train of pieces with varying success till the year 1653, when the tragedy of 'Pertharite' was produced, and was decidedly unsuccessful. Corneille then turned his attention to other kinds of poetry, and began to versify Thomas à Kempis, 'De Imitatione Christi.' In about six years he again turned to the drama, and the success of 'Œdipe,' produced in 1659, encouraged him to go on. His opera of the 'Toison d'Or' remains

a specimen of what he has done in that species of composition. The success of this piece was decided, but it was only the flame of an expiring lamp. In vain he wrote fresh tragedies, in vain did his friends laud them to the skies; the public began to suspect that his genius was worn out, and he had ceased to be popular before the production of his last pieces, 'Pulcherie' (1672) and 'Surena' (1674). His latter works have sunk entirely into oblivion. He died in the year 1684, at the age of 78, having been a member of the Académie 37 years.

CORNEILLE, THOMAS, brother of Pierre Corneille, was 20 years younger, having been born in the year 1625. He distinguished himself in early life by a comedy in Latin verse, which he composed during his education at the Jesuits' College. Like his brother he began by imitating the Spanish dramatists, and in the course of his career produced no less than forty-two pieces, tragedies and comedies. The works by which he is chiefly remembered are 'Le Comte d'Essex,' and 'Ariane,' both tragedies. On the death of his brother, Thomas Corneille took his place in the Académie, and contributed to the 'Dictionnaire:' he also assisted his friend De Vise in editing the 'Mercurie Galant,' a noted periodical, and became a member of the Academy of Inscriptions. He died at Andelys in 1709, having shortly before lost his sight.

CORNEL-TREE. [CORNACEÆ; CORNUS.]

CORNELIAN, or CARNELIAN. [AGATE.]

CORNET, a commissioned officer in a regiment of cavalry. He is immediately inferior to a lieutenant, and his rank corresponds to that of an ensign in a battalion of infantry.

The word is derived from the Italian *cornetta*, signifying a small flag; and hence, both in the English and French services during the 16th and 17th centuries, it was applied not only to the officer who had charge of the standard, but to the whole of a troop, which seems then to have consisted of 100 men and upwards.

The full-pay of a cornet, in all the regiments of cavalry in the British army, is 8*s.* per day, or 146*l.* a year, and the half-pay is 3*s.* 6*d.* a day.

CORNET, an ancient wind instrument formed of wood; it was superseded in the latter part of the 17th century by the oboe.

CORNET-STOP, in the organ, is an imitative treble-stop, consisting of five ranks of pipes, each key of the instrument causing all the five pipes to sound at once; they are tuned to a given note and its 8th, 12th, 15th, and 17th.

CORNICE. [CIVIL ARCHITECTURE.]

CORNOUAILLES, a large district in Bas-Bretagne of which Quimper was the capital. It gave title to a count. It is now included in the departments of Finistère, Côtes-du-Nord, and Morbihan.

CORNS are in the first instance merely thickenings of the cuticle, generally of the toes, arising from continued pressure over a projecting portion of bone. While superficial, a corn is moveable, and retains the lamellated structure of the cuticle; afterwards it acquires a base, attaches itself more firmly to the subjacent parts, and becomes a complete corn. 'A bursa or bag of synovial membrane, similar to those bursæ which are of original formation, but of very small size, is formed between the thickened cuticle and the cutis; it is this combination of thickened cuticle with a subjacent bursa which constitutes a perfect corn.' Corns are either hard and dry, which is the case when they are situated externally; or they are soft, when situated between the toes. The inconveniences arising from corns are generally slight, but sometimes they are very serious. Simple corns may be relieved by paring or the application of some adhesive substance on leather, with a hole over the corn. Tight boots and shoes should also be avoided.

CORNSTONE. The peculiar limestone, often mottled in colour, of the old red sandstone of Hereford, Salop, and South Wales, receives this title. (Murchison, *Silurian System.*)

CORNU AMMO'NIS, the old Latin name for the now well-known fossil shell, the *Ammonite.* These *cornua Ammonis* were so called from a fancied resemblance to the horns sculptured on the head of Jupiter Ammon; and, indeed, in the earlier times, many regarded them as the twisted horns of some animal; others took them for petrified marine worms rolled up; and others for coiled petrified serpents. The legends of the saints invested them with a sacred interest.

> ——'Of thousand snakes, each one
> Was changed into a coil of stone,
> When holy Hilda pray'd.'

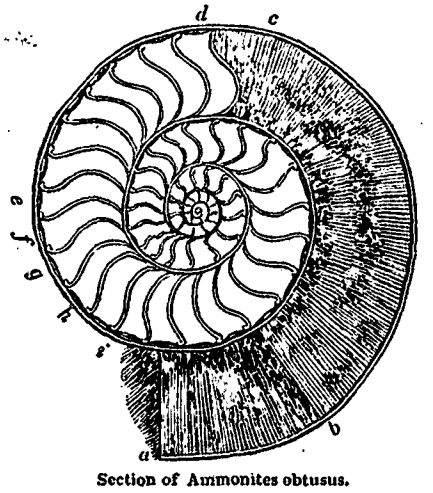
Nor were these erroneous opinions confined only to the unlearned; they were entertained by men of erudition, some of whom went so far as to attribute their formation to the plastic power of the earth, regarding them as freaks of nature.

These fossils, as is now clearly demonstrated, are the relics of certain extinct polythalamo-testaceous cephalopods, of which various distinct forms are characteristic of certain systems of rocks, and hence the importance of their study to the geologist. [AMMONITES; BELEMNITE; CEPHALOPODA.] According to Dr. Buckland, the family of the Ammonites extends through the entire series of the fossiliferous formations to the chalk inclusive. They occur in Europe, Asia, and America, in strata apparently of the same date; and in some instances the genera, and even the species, are identical. In some situations they are met with in prodigious numbers, and often of very large size, even from 2 to 4 feet in diameter. Examples of 4 feet in diameter have been obtained from the chalk near Margate.

Cuvier appeared to consider the Ammonites as internal shells, like *Spirula*, and found one reason in the smallness of the outer chamber of lodgement. But, in the opinion of Professors Owen and Buckland, they were external shells, in the outer chamber of which the animal resided. Cuvier's observations were made on imperfect specimens; and indeed the outer chamber of the Ammonites is very seldom preserved entire; 'but, when this happens, it is found to bear at least as large a proportion to the chambered part of the shell as the outer cell of the Nautilus Pompilius bears to the chambered interior of that shell. It

often occupies more than a half, and in some cases the whole circumference of the outer whorl. This open chamber is not thin and feeble, like the long anterior chamber of the *Spirula*, which is placed within the body of the animal producing this shell, but is nearly of equal thickness with the close chambers of the Ammonite.' (Buckland.)

It is plain that the Ammonite could rise or sink in the ancient ocean at pleasure. The chambered portion of the shell, as in the Nautilus Pompilius, was filled with air, or some gaseous fluid, which, by the forcible injection of water through a peculiar siphon passing through the chambers, could be compressed, when the animal would sink; or, if it wished to float, the water would be withdrawn, and it would gradually rise. It might be, as in the case of the Nautilus Pompilius, that the retraction of the head and tentacles into the shell was necessarily followed by the injection of water through the siphon, while the protrusion of the head and tentacles would in like manner involve the expansion of the air in the chambers, and the return of the fluid. These air-chambers, divided from each other by a thin plate, result from the growth of the animal, which, as it increased in bulk, advanced along the outer chamber of the cell, leaving successive spaces behind it, divided from each other by a layer or plate of secreted shelly matter, with a perforation or tube running through all, along which tube the membranous siphon of the animal passed. Dr. Buckland very happily illustrates the different arrangements by means of which a union of lightness and strength is secured to the shell, both from the external conformation and the mode in which the transverse plates are disposed, as well as the mechanism of the chambers, in order to form a float regulated by a pipe passing through their whole series, and by the hydraulic action of the siphon; but, as our limits will not allow us to enter minutely into the subject, we must refer the reader to the 'Bridgewater Treatise,' in which a most interesting account of the structure of these shells is given.



Section of Ammonites obtusus.

The letters *a, b, c, d*, show the outer chamber. It should be remembered that the specimen is apparently imperfect at the aperture. The siphon or tube of communication may be traced from *d*, where it opens into the last or outer chamber, along the edge of the section, *e, f, g, h, i*, to the very nucleus of the shell. The waved transverse lines represent the partitions of the chambers.

According to Mr. Owen's system, the Ammonites form the fourth genus of his second family *Ammonitidæ*, of his first order *Tetrabranchiata*, of the class *Cephalopoda*.

The general characters of the Ammonites may be thus summed up:—Shell discoid, more or less compressed; whorls of the spire more or less evident; the aperture with borders a little opened out; the partitions constantly sinuous; a dorsal siphon. The animal unknown, but apparently destitute of an ink-bag.

M. Rang throws the Ammonites into three groups:—

1. Those with an embracing spire.—Example, *Ammonites subradiatus*, &c.

2. Those with a semi-enveloping spire.—Example, *Ammonites Mantellii*, &c.

3. Those with a spire entirely uncovered.—Example, *Ammonites giganteus*, &c.

(Professor Phillips's *Guide to Geology;* Buckland's *Bridgewater Treatise;* J. Sowerby's *Min. Conch.;* the *Cyclopædia of Anatomy and Physiology*, &c.)

CORNUCO'PIA, or CORNU-COPIÆ. Ovid, in his 'Fasti' (v. 115–128), tells us that one of the goats of Amalthæa, who nursed Jupiter in Crete, broke off its horn against a tree, when the nymph, having wreathed it with flowers and filled it with fruit, presented it to the god. Jupiter, when he came into power, called his nurse to the skies, and made the horn the emblem of fertility.

The Cornucopia occurs very frequently in the types of ancient coins, particularly upon those of Sicily.

CORNULITES, an obscurely characterised genus (of Polypiaria?) which occurs in the Silurian limestones and sandstones very frequently, as at Dudley, Usk, Marloes Bay, &c. (Murchison, *Silurian System*, pl. 26, f. 5.)

CORNUS, a genus of plants, the type of the natural order *Corneæ*. The species are trees, shrubs, or low herbs, with opposite leaves, and white, sometimes yellowish, flowers. *C. sanguinea*, Dog-wood, Wild Cornel-tree, is a native of Great Britain, in hedges and thickets. It also inhabits North America, in Canada and New York, but has been supposed to be introduced there. It has a dark purple fruit, which is very bitter. The wood is used for making charcoal from which gunpowder is made. The fruits are sometimes mistaken for those of buckthorn, but do not possess the active properties of that plant. The wood is used for making skewers for butchers. It is called in the country Female Cornel, Prick-wood, Dogberry-tree, Hound's-tree, Gaten and Gaten-tree. *C. Suecica*, Dwarf Cornel, is found in high mountain pastures in England and Scotland. It is not so large a plant as the last, and has purple flowers with yellow stamens. The berries are red

and sweetish, and are supposed by the Highlanders to create an appetite, of which their name for them, *Lus-a-chrasis*, is expressive. *C. florida* and *C. sericea* are American species possessing tonic properties, and used in medicine in America.

The species of Cornus form good plants for shrubberries, and many of them will grow under the drip of trees, and in spots where other plants will not thrive. They may be propagated by cuttings, layers, or suckers.

CORNWALL, an English county, forming the south-west extremity of the island of Great Britain. The form of the county approaches that of a right-angled triangle, measuring 70 miles from Plymouth Sound to the Land's End, 42 from the Land's End to the north-east corner of the county, and 81 from N.E. to S.W. The area of the county, exclusive of the Scilly Isles, is 1330 square miles. Cornwall lies between 49° 55′ and 50° 55′ N. lat., and 4° 9′ and 5° 42′ W. long.

The only county with which Cornwall is conterminous is Devonshire, which bounds it on the E.: on all other sides it is surrounded by the sea. The north-west coast is high and rocky; it contains the Bays of Bude, Widemouth, Padstow, Constantine, Watergate, Towan, Fistal, Cranstock, Holywell, Piran, and St. Ives; and the Points or Headlands of Dazard, Castle, Penkenner, Carnbeak, Tintagel, Pentire, Stepper, Trevose, Towan, Penhale, Gurnard, Cornwall, Polpry, and Peden-Mean-Due. The Land's End juts out very pointed; and near it are the Scilly Islands. The coast from the Land's End to Plymouth Sound is marked by bolder promontories and deeper bays: but there are more frequent intervals of low and shelving beach. The chief bays and inlets are those of the Mount's, Falmouth, St. Mawes, Germanis, Veryan, Megavissey, St. Austell, St. Blazey, and Plymouth; and the chief points or headlands are those of St. Michael, Cuddan, the Lizard, Innis, Black Head, Chynals, Dranna, Nare, Rosemullion, Pendennis, St. Ann's, Greber, Pennare, Dodman (379 feet high), Chapel, Ram Head, and Penlee Point.

From the central part of Cornwall, which is the highest, the land slopes towards the sea on each side. The whole surface of the county is irregular. On the northern coast the land is generally high, with short narrow valleys: on the south coast the valleys are wider. The loftiest summits are the Brown Willy, 1368 feet, and the Caradon, 1208 feet.

The principal rivers of Cornwall are the following:—The Tamer rises in the moors which form the north-east point of the county, and flows into Plymouth Sound; its chief tributaries are the Deer, the Claw, the Werington, the Attery, the Lyd, the Inny, the Tavy, and the Lynher. The Fowey rises near the Brown Willy Mountain, and falls into the sea at Fowey. The Alan or Camel rises near Camelford, and flows into the sea near Padstow. The Fal rises in Tregoss Moor, between Bodmin and Truro, and flows into the sea at Falmouth Harbour. The Seaton, the Looe, the Hel, the St. Neot's, the Warleggan, the Allen, the Kenwin, and others, are all small streams. The Tamer is navigable for 32 miles, the Fowey 5 miles, the Camel 7 miles, and the Fal about 12 miles.

Cornwall has four navigable canals, namely, the Bude and Holsworthy, the Bude and Launceston, the Liskeard and Looe, and the St. Columb and Mawgan Porth. The county is supplied with good mail-coach and other roads. The Cornwall Railway, the West Cornwall Railway, and a few minor branches, are now in course of construction.

The rocks which predominate in Cornwall are among the lowest in the arrangement of the strata of our island, and belong to the primitive and transition classes. The high land which occupies the centre is composed of granite, which in several extensive districts rises to the surface. Occasional veins or shoots from this granite formation penetrate northward and southward into the superincumbent strata. The granite of Cornwall contains numerous metalliferous veins, both of copper and tin. It is liable to decomposition. Reposing on the granite is clay-slate, which occurs on either side of the central ridge: it is traversed by veins or dykes of porphyry. The other principal rocks of the county are serpentine, mica, slate, diallage, greenstone, soapstone, and limestone. The miners give the name of *grouan* to granite, *killas* to clay-slate, and *elvan* to porphyry.

Copper and tin are the most important minerals of Cornwall. The extent of the metalliferous veins is unknown, as well as the depth to which they extend: no miner has yet seen the end or bottom of a vein. Their width varies much, from the thickness of a sheet of paper to 30 feet; but they are usually from 1 to 8 feet in thickness. It is seldom that the ores are found nearer to the surface than 80 or 100 feet. The chief mineral locality lies south-west of the rivers Alan and Fowey. Small quantities of lead, silver, iron, zinc, antimony, cobalt, and arsenic are found within the county. The copper and tin veins run mostly east and west; the others north and south.

Cornwall, being situated between two seas, is more subject to variations of weather than most other counties; the mountains attract the clouds, charged with moisture, which the prevalent west winds bring from the Atlantic. The soil of the mountainous districts is extremely barren and unproductive; but in a few of the vales a tolerably rich soil is found, well adapted to the growth of corn, roots, and artificial grasses. The surface consists chiefly of an argillaceous earth produced by the decomposition of slate, mixed with various portions of vegetable matter accumulated in the course of ages. There is no great extent of natural meadows, and the want of them is made up by laying down part of the arable land with artificial grasses. The system of paring and burning the surface is adopted after the land has been some time in pasture. Amongst the varieties of grain raised in Cornwall, we may notice the naked barley, which is there called *Pillez*. It is sown for the purpose of fattening pigs and poultry, and likewise for making gruel to fatten calves. The soil and climate of Cornwall are peculiarly favourable to the growth of potatoes, of which two abundant crops are sometimes produced in one season.

The principal cattle in Cornwall are of the Devonshire breed. In no county are oxen more generally used for the plough than in Cornwall. Horses were formerly used only to carry loads on their backs. Good roads and the use of carts and waggons are comparatively new improvements, and by no means general. The implements of husbandry are either of a rude construction or adopted from other districts. The county is rather bare of trees. Forests probably once existed, but they have now disappeared.

Divisions and Towns.—Cornwall is divided into 9 hundreds. The number of parishes is about 205. The following are the principal towns, with the population of each town or parish in 1841:—

St. Agnes is a small town on the N.W. coast. The parish comprehends an important mining district. Population of the parish, 7757.

St. Austell, a market-town of considerable size, on the S.E. coast, is situated a short distance inland from St. Austell Bay. The town occupies the side of a hill, and slopes gradually to a rivulet which waters a narrow valley. The streets are narrow. The church is a handsome ancient structure, with a tower adorned with statues and sculptured ornaments. St. Austell was a poor village in the time of Henry VIII., but has risen to its present size in consequence of its vicinity to valuable tin and copper mines. Porcelain clay and good building stone are also obtained in the neighbourhood. There are harbours at Charlestown and Pentewan, through which coals are imported from Wales, and the produce of the mines and the porcelain clay are exported. Population of the parish, 10,320.

Bodmin, a market-town and parliamentary borough, is situated in the central part of the county, 234 miles W.S.W. from London. It is a very ancient place, and contained a monastery of Austin canons, which was dissolved in the reign of Henry VIII. The town consists principally of a single street about a mile long. The church, which was rebuilt about 1470, is a fine old structure, with a tower, a remarkable font, and a curious sculptured tomb of Thomas Vivian, the last prior. There is a town-hall, a county-gaol, a county lunatic asylum, and a union workhouse. Population of the parish, 4643; of the parliamentary borough, which includes three other parishes and returns two members to the House of Commons, 5901.

Boscastle is on the N.W. coast, not far to the N.E. of Tintagel Head. It is a poor little place, but in a very romantic situation. The castle from which it takes its name is no longer standing. Population, 807.

Bossiney is on the N.W. coast, near Tintagel Castle, the ruins of which are on a high rock jutting out into the sea, by which the rock is nearly surrounded. It is said to have been a very strong fortress. Bossiney is a mere village, with a population of 87; but the parish of Tintagel, in which it stands, includes also Trevenna, with a population of 219.

Callington is not far from the eastern border of the county, in a low situation, not far from the Lynher, a feeder of the Tamer. The houses are chiefly arranged in one broad street. The church, or rather chapel, was almost wholly rebuilt about the middle of the 14th century. Callington sent two members to parliament, but was disfranchised by the Reform Act. Population of the parish, 1685.

Camborne is on the road from Redruth to St. Ives, 3½ miles from Redruth. It is neatly built, in the midst of the mining districts. The church is a fine specimen of the granite churches of this county, built in the perpendicular English style. Population of the parish, 10,061.

Camelford is 14½ miles W. by S. from Launceston. The town is in an unpleasant situation, but the streets are broad and well paved. The river Camel, which rises about 4 miles to the N.N.E., flows through the town, and gives name to it. There is a town-hall. The parish church is at Lanteglos, more than a mile S.W. of the town. Camelford was disfranchised by the Reform Act. Population of the town, 705.

St. Columb Major is situated on the south side of a stream which flows into the sea between Trevose Head and Towan Head, on the north-west coast. It is a small place, but pleasantly situated, about 11 miles from Bodmin. The buildings are ancient. There is a spacious cross church, the interior of which exhibits some curious specimens of early workmanship and numerous monuments. Population of the town, 1337.

St. Day is 2 miles E. from Redruth. It appears to have been of more consequence in former times, but had fallen much into decay; of late years it has greatly recovered, owing to the increase of the mining population in the neighbourhood. Population of the parish of Gwennap, in which St. Day is situated, 10,794.

Falmouth. [FALMOUTH.]

Fowey is situated on the west bank of the river Fowey, near its mouth, where it expands into a small æstuary, and forms a convenient harbour. The harbour is defended by two modern batteries, and by a fort, called St. Catherine, which was built in the reign of Henry VIII. The town is built in a straggling manner, and the streets are narrow. The church is a spacious and lofty fabric of the perpendicular English style of architecture: it was rebuilt, or at least much altered, about 1466. There is a spacious market-house, with a town-hall over it. The chief business of the town consists in catching and curing pilchards: the fishery employs many vessels. Fowey was disfranchised by the Reform Act. Population of the parish, 1643.

Grampound is situated on the river Fal, which flows through the town, the greater part of which is on the east bank of that river, and consists of one main street on the declivity of a hill. Grampound was disfranchised by the Reform Act. Population of the township, 607.

Helston is a municipal and parliamentary borough, situated on the east bank of the small river Loe, or Looe, about 2½ miles from the sea, and about 8 miles E. from Penzance. The streets are irregular, but are paved and lighted with gas, and the town has a neat and clean appearance. There is a town-hall. The town is in the centre of an active agricultural and mining district. The

municipal borough is governed by 4 aldermen and 12 councillors. Population, 3584. Population of the parliamentary borough, which returns one member to the House of Commons, 8169.

St. Ives is a municipal and parliamentary borough, situated on the northern coast of the county, about 5 miles N.N.E. from Penzance. The town extends across a peninsula. The streets are generally narrow and uneven. The church is spacious, and has a lofty tower. There is a pier, and a small battery defends the approach by sea. The chief business is connected with the pilchard fishery and with the tin mines. The municipal borough is governed by 4 aldermen and 12 councillors. Population, 2597. Population of the parliamentary borough, which returns one member to the House of Commons, 8645.

East Looe is situated on the east bank of the river Looe, which here falls into the sea, on the south-eastern coast. It is built on a flat piece of ground between the river Looe and the sea, and is described as a labyrinth of short narrow dirty alleys. East Looe is united with West Looe on the opposite side of the river by a bridge of 13, or, according to other accounts, 15 arches: this bridge is 141 yards long, but only 6 feet 2 inches wide. The inhabitants are chiefly engaged in the pilchard fishery. The harbour, formed by the mouth of the river, admits vessels of 100 tons, and is protected by a small battery. Population, 926.

West Looe is separated from East Looe by the river Looe. Population, 616. West Looe was a parliamentary borough, but was disfranchised by the Reform Act.

Launceston, a municipal and parliamentary borough, is situated near the eastern boundary of the county, on the hill which rises from the southern bank of the Attery, about 2 miles from its junction with the Tamer. The streets are irregular and narrow, but improvements have been made of late years. The church is a very remarkable structure of granite, ornamented with curious carved work. The municipal borough is governed by 4 aldermen and 12 councillors. Population, 2460. Population of the parliamentary borough, which returns one member to the House of Commons, 6070.

Liskeard, a municipal and parliamentary borough, is about 12 miles E. by S. from Bodmin. The town stands partly in a hollow and partly on rocky heights. The streets are very irregular, but the town has been much improved in recent times. The town-hall is a handsome structure resting on granite columns. Liskeard is the market-town of an extensive agricultural district. The municipal borough is governed by 4 aldermen and 12 councillors. Population, 3001. Population of the parliamentary borough, which returns one member to the House of Commons, 4226.

Lostwithiel is situated on the western bank of the Fowey, about 5 miles from the sea. The streets are narrow and roughly paved. The church is a curious edifice, with a tower in the early English style, and an octagonal lantern and spire of decorated English: it has a fine east window. There is a town-hall. Population of the parish, 1186.

Marazion, or Market Jew, is on the coast of Mount's Bay, 15 miles from the Land's End. This town is built on the slope of a hill, which rises towards the north and shelters it from cold winds. The temperature is consequently mild, but much rain falls. Population, 1683.

St. Mawes is situated on an arm of the Carrick Road, an inlet of the æstuary on which Falmouth stands. St. Mawes is a small place, consisting of one street near the sea, and inhabited by fishermen. Population, 941.

Mevagissey is a small town on Mevagissey Bay, on the south-eastern coast. Population of the parish, 2310. Ships of 100 tons may ride securely in the pool or basin of Mevagissey.

St. Michael's Mount, opposite the town of Marazion, is connected with the main land by the sands when the tide is out, but is insulated when the tide is in. Across the sands is a narrow causeway of pebbles to render the communication more perfect. The Mount has probably been separated from the land by some great convulsion far beyond the reach of tradition or historical record.

It is supposed, and apparently with reason, that St. Michael's Mount was the Ἰκτις of Diodorus Siculus, the depôt for the tin refined and cast into ingots by the Britons. There was formerly a monastery on the Mount, which was much resorted to as a place of pilgrimage. It was regarded also as a stronghold, and a castle was built on it. The Mount was an object of contention both in the civil wars of the Roses and of Charles I. There is a small pier. The Mount is extra-parochial. Population 163, but considerably more in the pilchard season. The island, containing the Mount and a level piece of ground at its foot, is about a mile in circumference, and comprehends 70 acres. The Mount is 231 feet in height from the level of the sea to the platform of the chapel tower. The ascent is steep, and is defended by two small batteries; the summit is occupied by the remains of the monastic buildings, which have been converted into a dwelling-house. Formerly the inhabitants had no other water than rain water collected in drains; but about the middle of the last century, on sinking a well, a fine spring was found, at the depth of 37 feet. The geological structure of the Mount is chiefly granite.

St. Michael's, otherwise Michell, is on the main road from Bodmin to Penzance. This place deserves notice only as being one of the parliamentary boroughs disfranchised by the Reform Act. Population, 107.

Padstow is at the mouth of the river Camel, which here forms a wide æstuary. The town is beautifully situated in a vale, adorned with gardens on each side, and presenting, when the tide is up, a clear expanse of water apparently landlocked by the granite cliffs, which form the banks. The harbour is the best on the northern coast of Cornwall, and, though the entrance is much obstructed by sand, is capable of receiving vessels of considerable burden. The streets are in general

narrow, and many of the buildings antiquated; but the town has been much improved within the last half century by the erection of many new houses: the general roofing is a fine blue slate. There is an excellent pier, a custom-house, quays, and shipwrights' yards. The church is in the perpendicular style of architecture. Population of the town, 1791.

Penryn is a municipal borough, situated about 2 miles N.W. from Falmouth, on an inlet of Falmouth Harbour. It is built on a low hill which projects into the inlet, and divides it into two navigable branches. At the point between these two branches is the public quay, from which the main street extends westward over the ridge of the hill, with streets and lanes running into the valleys on each side. There are commodious wharfs on each of the navigable branches. Granite is exported, and corn and other necessaries imported for the supply of the town and surrounding country. A good trade is carried on between Penryn and the populous mining district of Redruth. The municipal borough is governed by 4 aldermen and 12 councillors. Population, 3337. Penryn is united with Falmouth in sending one member to the House of Commons. [FALMOUTH.]

Penzance, a municipal borough, is situated on the north-western shore of Mount's Bay, about 9 miles from the Land's End. The town has increased of late years, and many of the houses are modern, neat, and commodious. The church and the town-hall are both modern, and constructed of hewn granite. The town-hall is surmounted by a cupola, and its eastern front consists of a pediment supported by four noble columns. The quay and pier are near the southern end of the town. A large proportion of the tin produced in Cornwall is shipped at Penzance. Copper, earthenware, and pilchards are also exported. The climate is very mild, and the place is on that account frequented by invalids. Penzance is divided into 2 wards, and is governed by 6 aldermen and 18 councillors. Population, 8578.

Polperro is on the southern coast, 6½ miles W. from Fowey. The situation of this little town is singularly romantic, the houses being on the side of two steep rocky hills, forming a very narrow valley, through which runs a small river. There is a harbour for vessels of 150 tons. An extensive hook and line fishery is carried on. There is also a pilchard fishery, and some trade is carried on in coals, limestone, and grain. Population, 918.

Redruth is a market-town about 5 miles N.N.W. from Penryn. The town is situated on the brow of a hill, and derives its importance from the valuable tin and copper mines in the neighbourhood. The produce of the mines is shipped from Penryn and Falmouth on the southern side of the coast, and from Portreath on the northern side. Population of the parish 9305.

St. German's is on the river Tidi, which unites with the Lynher, forming the St. German's River, on the southern coast. It is situated on the slope of a tolerably high hill, which rises on the north side of it. The inhabitants of the parish (2843) derive their chief support from agriculture and fishing. St. German's was at a remote period the seat of a bishopric, which was afterwards united with that of Crediton, and from this union arose the see of Exeter. There was a priory here, which was suppressed in the reign of Henry VIII. The conventual church, now used as the parish church, was formerly much more extensive. The church now consists of a nave and two aisles. The architecture is chiefly Norman. St. German's was a parliamentary borough, but was disfranchised by the Reform Bill.

Saltash is on the right bank of the Tamar, a little above its junction with the Lynher. The town is built on the ascent of a steep hill, the summit of which is crowned by the chapel of ease and the town-hall, beneath which is an open market-place. The streets are narrow and indifferently built. Saltash is now chiefly inhabited by fishermen. Population, 1541. It is an ancient town, and was a parliamentary borough, but was disfranchised by the Reform Act.

Stratton is in the northern extremity of the county, on a rivulet which falls into the sea at Bude Haven, in Bude Bay. Population, 429. The harbour at Bude admits only small vessels.

Tregony is situated on the east bank of the river Fal, about 7 miles W. by S. from Truro. This town was formerly of some consequence, but it began to decay as Truro began to flourish. The houses are chiefly arranged in one long street on the side of a hill sloping down to the Fal, over which there is a bridge. Population of the parish, 995.

Truro, a municipal and parliamentary borough, is situated at the confluence of the Allen and Kenwyn, two streams which form a river a furlong wide flowing into the Carrick Road. The town occupies the point of land between the Allen and Kenwyn, and portions of the opposite banks. There are two churches, a chapel of ease, and places of worship for Methodists and other Dissenters. The trade of Truro is considerable, and it is the centre of an important mining district. Tin is smelted, and tin and copper are exported. The municipal borough is divided into 2 wards, and is governed by 6 aldermen and 18 councillors. Population of the municipal borough, 3043, but, including the suburbs, is probably little short of the population of the parliamentary borough, which is 9901. Truro returns two members to the House of Commons.

Ecclesiastical and Legal Divisions.—Cornwall is in the diocese of Exeter; and the limits of the county nearly coincide with those of the archdeaconry of Cornwall. Cornwall is in the western circuit. The spring assizes are held at Launceston, the summer assizes at Bodmin.

Cornwall is under a peculiar jurisdiction, that of the Duke of Cornwall. The duchy of Cornwall was created in 1337, in favour of Edward the Black Prince, and settled by act of parliament on the eldest son of the King of England. The immediate government of the county was vested in the duke, who has still his chancellor, attorney-general, solicitor-general, and court of exchequer. He also appoints the sheriffs. The mining trade is under the separate jurisdiction of the Stannary Courts;

the lord warden of the Stannaries, and the vice-warden, are at the head of this jurisdiction, with a final appeal to the duke and his council. The miners claim to be free from all jurisdiction but that of the Stannary Courts, except in cases affecting land, life, or limb. The vice-warden's court is held once a month, and is a court of equity for all matters relating to the tin mines and trade. The Stannary laws are revised, or new ones enacted, by the duke and his council, with the consent of what is called the Stannary Parliament, consisting of twenty-four Stannators, gentlemen of property in the mining districts, chosen six for each stannary.

Previous to the Reform Act, Cornwall had the largest share in the parliamentary representation of all the English counties. The county was represented in parliament at the time of the first summons of Edward I., and in the latter part of that monarch's reign it returned two knights of the shire, and six borough representatives. At the time of the Reform Bill it sent forty-two members to parliament. At present it sends four members for the county, two each for Truro, Bodmin, and Penryn with Falmouth, and one each for Liskeard, Launceston, St. Ives, and Helston.

Natural Curiosities.—The granite rocks of Cornwall present in different places an appearance so singular, that they have been mistaken for the efforts of human art in its earliest and rudest stage. The Cheese Wring, or Wring Cheese, occupies the highest ridge of a hill north of Liskeard; it is a cairn or heap consisting of five stones piled one on the other, of which the upper ones are so much the largest as to overhang on all sides the lower ones, which form their base. The formation of this group is ascribed by Dr. M'Culloch solely to natural causes. It is, in fact, the remains of a much larger mass, the lateral parts of which have decayed, not being so well poised as the singular part which yet remains. The Logging, or Logan Stones, are stones which are poised on a fulcrum, and which oscillate when moved by an adequate force. The most remarkable of these Logging Stones is near the Land's End. The stone is 17 feet in length, and above 32 in circumference near the middle, and is estimated to weigh nearly 66 tons. It rests by a somewhat rounded base on an inclined surface, and is so exactly poised that a force of a few pounds is sufficient to make it vibrate; it is within two or three feet of the edge of an overhanging precipice. There are other vast masses, supported each on the points of two rocks, and called *tol-men*. These, like the former, are formed by the partial disintegration of granite rocks.

History and Antiquities.—Before and at the time of the Roman invasion, Cornwall was probably included in the territory of the tribes of the Damnonii and the Carnabii. It had been before known to the Phœnicians and the Greeks for its tin mines (Strabo, lib. iii. 175). Various remains are still met with in the county, supposed to be of early British origin, and to have been intended as memorials of the dead. Some of these remains consist of blocks of stones standing in pairs; while others consist of circles of stones. They are found at Dryft, near Penzance; at Bolleit, near the Land's End; near Wadebridge; at Boskednan; near St. Ives; near Liskeard; at Bottallack; at Wendron; and at several other places. There are also in Cornwall several circles, which Dr. Borlase supposes to have been devoted to the purposes of an amphitheatre. The amphitheatre of St. Just, near Cape Cornwall, may be taken as a specimen of these circles; it consists of circular stone seats rising regularly one above another, and inclosing an area of 126 feet diameter. The seats or steps, six in number, are of stone, 14 inches wide and 1 foot deep, surmounted by a rampart 7 feet wide, and rising 1 foot above the highest seat, with a ditch outside, 10 feet deep from the top of the rampart. Among other British antiquities in the county are barrows containing sepulchral urns; cromlechs, or inclosures, formed of a few immense stones; artificial caves, or subterranean galleries, formed by walls of straight stones with other stones laid across; and various weapons and implements of metal.

It is not now known whether Agricola or Vespasian conquered Cornwall, nor at what date the conquest occurred. A few geographical notices of the county in the Roman period occur in Ptolemæus, but they are very obscure. Two Roman roads enter Cornwall from Devonshire. One is conjectured to have proceeded westward by Liskeard, Lostwithiel, St. Austell, and Grampound to St. Michael's Mount, the presumed Ictis (Ἰκτις) of Diodorus. The other road came from the north of Devon to Stratton, and is conjectured to have led towards Bude Haven, which was probably then a large and more important harbour. There is a third ancient road, which is supposed however to be of British origin.

Upon the departure of the Romans, Cornwall recovered its independence, which it maintained for a long time against the invading Saxons. The famous Arthur, whose history has been so distorted by fable as to cast a doubt over his existence, is generally reputed to have been a native of this county.

The continued and resistless pressure of the Saxons having driven westward those Britons who refused to bear the yoke of the invaders, Cornwall and Devonshire became the place of refuge to many. It was probably about this time that part of the superabundant population, thus compressed into the extremity of the island, took refuge in Bretagne, already colonised by their countrymen [BRETAGNE], and gave to a district there the name of the country which they had left. [CORNOUAILLES.] The Cornish Britons carried on, with but few interruptions, constant hostilities against the Saxons for many centuries, with chequered success. This continued until the time of Athelstan, by whom the whole country, including the Scilly Isles, was reduced and incorporated with the now consolidated kingdom of England. From this time the provincial history of Cornwall offers little to interest the reader for many centuries. Some ravages of the Danes, and some intestine commotions, are the only memorable events of this long and troubled period.

Cornwall retains many memorials in the numer-

ous camps and earth-works. These are, for the most part, nearly round or oval, a form which induces us to refer them to any other than a Roman origin. They possibly were formed during the severe and protracted struggles of the Cornish Britons with the Anglo-Saxons. In many places of the coast, a small promontory, or portion of the cliff, is inclosed by a rampart, or vallum, running from one edge of the cliff to the other, and strengthened on the land side by a ditch. On the hills are the remains of rude circular buildings, called castles, the walls of which were formed of dry stones, not joined with any cement: these must be referred to an early period; Dr. Borlase considers them to be of Danish origin. Between Mount's Bay and St. Ives' Bay these castles are very numerous; one of them, Chun Castle, is of great extent.

Of castles intended for residence as well as defence, and belonging to a later date than those just described, remains exist of Carn-brea Castle, near the Land's End; Tintagel Castle, near Bossiney; Launceston Castle; Trematon Castle, near Saltash; Restormel Castle, near Lostwithiel; Fowey Castle; St. Mawes Castle; and Pendennis Castle, near Falmouth. There are a few remains of monastic and early ecclesiastical buildings in the county; among others, those of St. German's priory, St. Michael's priory, St. Benet's monastery, St. Lawrence's chapel, near Bodmin, Norwinston Church, Kirkhampton Church, and Sheviock Church.

In the war of the Roses, the Cornish men seem to have taken the Lancasterian side, induced mainly by the influence of Sir Hugh Courtenay of Boconnoc, and Sir John Arundell of Lanherne.

In the reign of Henry VII. (1495), they rose in rebellion on occasion of a tax levied to defray the expense of a war with Scotland. In 1497 the Cornish men were again in arms to support Perkin Warbeck, but the flight of that Pretender caused the failure of the attempt. In the reign of Edward VI., in 1549, a new revolt broke out, connected with the religious revolution of that period. The Cornish men took up arms to sustain the ancient (Catholic) church, and besieged Exeter, but were forced to raise the siege, and at last, though not without difficulty, were subdued. The change of the religious institutions of the county led to the change of the common language of Cornwall; the people, for the most part of British descent, with comparatively few Saxons settled among them, had retained a language of their own, a dialect of the Celtic. The introduction of the English church service paved the way for its gradual decline; yet, in the reign of Charles I., some aged people near Penryn were quite ignorant of the English language, and in the early part of the last century the Cornish was still spoken by the fishermen and market-women near the extreme southern point of the county. In the great civil war of Charles I. and his parliament, the Cornish men seem to have been on the whole in favour of the king. The Dutch made two attempts on the Cornish coast in the war between them and the Commonwealth, but were defeated in both.

CORNWALLIS, MARQUIS. Charles, second Earl and first Marquis of Cornwallis, was born December 31, 1738, and educated at Eton, and St. John's, Cambridge. In 1761, during the Seven Years' War, he served abroad under the title of Lord Broome, as aide-de-camp to the Marquis of Granby. In 1762 he succeeded to the peerage on the death of his father; in 1766 he was made colonel of the 33rd regiment of foot, and in 1770 governor of the Tower.

He served actively and with distinction, with the rank of major-general, under generals Howe and Clinton, in the campaigns of 1776-77-78-79, in New York and the southern states, and in 1783 was left in the command of South Carolina with 1000 men. He gained a victory over General Gates at Camden, August 16, 1780, and a second, less decisive, over General Greene at Guilford, March 15, 1781—both against superior numbers. In the course of the spring of 1781 Cornwallis invaded Virginia, where he obtained no decided success, but caused an immense amount of damage to private property. He was afterwards sent to Williamsburg, and moved thence to York Town on York River, where he intrenched himself in the strongest way he could. He was there besieged by the French and American forces, assisted by the French fleet under De Grasse, and reduced to surrender himself and his troops prisoners of war, after an obstinate defence, October 19, 1781. His capture however was a death-blow to the British cause, and principally led to that change of ministers and measures which resulted in the peace of 1782.

In 1786 Lord Cornwallis was appointed governor-general and commander-in-chief of Bengal. His administration is chiefly remarkable for the war undertaken against Tippoo Saib. [TIPPOO.] He beat him in the field, and in February 1792 laid siege to Seringapatam, and the capture of that city was averted only by a treaty, which stripped the sultan of one-half of his dominions. In August 1793 Earl Cornwallis returned to England, where he was raised to the rank of marquis, and appointed master-general of the ordnance. In 1798 (the æra of the rebellion) he was made lord-lieutenant of Ireland. He put down the rebellion: but he also checked the disgraceful outrages practised by the supporters of government, restored tranquillity, and acquired the goodwill of the Irish. In 1801 he was succeeded by Lord Hardwicke; and in the same year, being appointed plenipotentiary to France, he negotiated the peace of Amiens. He was reappointed governor-general of India in 1805, and arrived at Calcutta in August, in bad health. Proceeding immediately to assume the command of the army in the upper provinces, he was seized with illness, and died at Ghazapoor, in the province of Benares, October 5, 1805.

COROLLA, the name given by botanists to the innermost of the envelopes by which the reproductive organs of many flowers are covered. Like the calyx [CALYX], it is composed of leaves changed from the ordinary state of those parts in consequence of an alteration in the office they have to perform, but liable to resume the state of common

leaves if exposed to the effect of any disturbing cause. The corolla is usually thin, delicate, perishable, and both larger and more richly coloured than the calyx; hence the elder botanists considered those qualities proper to the corolla, and applied the term to all cases in which they existed. But it is now known that the calyx is frequently in the same state, and hence the only distinction that is now made between calyx and corolla is to consider every thing calyx which forms the exterior of two or more rows of floral envelopes, every thing corolla that belongs to the inner rows, and, when there is only one row, to refer that to the calyx, whatever the colour or texture of it may be.

The leaves of which a corolla is composed are called petals; and the endless varieties of its form and structure depend principally upon the different manner in which those parts are united, or upon the proportions they bear to each other. A monopetalous corolla, for instance, is composed of several petals joined more or less together by their edges; campanulate corollas originate from petals without a claw or unguis; tubular corollas from unguiculate petals. In a regular monopetalous corolla all the petals are of equal size, and are united in the same degree; in an irregular monopetalous corolla the petals are unequal in size, and perhaps unequally united. When the petals are separated, the corolla is said to be polypetalous.

COROLLARY (Corolla, 'a little crown') is frequently used for any necessary consequence of a proposition; but, technically applied in geometry, it means a consequence which immediately follows from the demonstration of a proposition, without the necessity of introducing any other proposition.

COROMANDEL COAST, originally *Cholomandala*, is the sea board of the western side of the Bay of Bengal, extending from Point Calimere on the south, in 10° 18′ N. lat., to the mouth of the river Kistna on the north, in 15° 50′ N. lat. Through its whole extent, about 350 miles, this coast does not afford any secure port or harbour; and, owing to the prevalence of the surf, it is difficult to effect a landing except by means of boats and rafts peculiarly constructed for the purpose.

CORO'NA BOREA'LIS and AUSTRA'LIS, the Northern Crown and Southern Crown. The first is a northern constellation, found in Aratus, who says it was formed by Bacchus in memory of Ariadne. It is situated between Bootes and Hercules, and the bright star of its cluster (marked *α*) may be seen about an hour eastward of Arcturus, and about eight degrees nearer to the pole. Corona Australis is a southern constellation, first found in Ptolemæus. It is situated between the front legs of Centaurus.

CORON, a seaport town and fortress in the Greek province of Messenia in the Morea, is situated on the west coast of the Gulf of Kalamata, the ancient Messenian Gulf, near the site of the ancient Colonides. It is a place of some trade, and exports oil and silk which are produced in the neighbouring district. The town consists of a few private houses, and a large castle or citadel, which stands on a high promontory, and is in good repair. The roadstead is open and exposed to the south winds, but, the bottom being soft sand, vessels driven upon it often escape without much damage.

CORONATION, the act of crowning or consecrating a king. This rite is of remote antiquity, as may be gathered from the notices which we have in Scripture, in the first and second books of Kings, of the coronations of Solomon, and of Joash the son of Ahaziah, of the latter of whom it is said that Jehoiada the priest took him, put the crown upon his head, and gave him the testimony, and they made him king, and anointed him.

The formulary which has served as the general model for the English coronations since the time of Edward III. is the 'Liber Regalis,' which is deposited in the archives of the dean and chapter of Westminster. It is supposed to have been written for the particular instructions of the prelates who attended at the coronation of King Richard II. and his queen. Copies of this manuscript, without its illuminations, are preserved in one or two of our manuscript libraries. The substance of the ceremonial directed in it is abridged in Strutt's 'Manners and Customs,' vol. ii. p. 22-37.

The following is the form of and ceremonial in administering the *Coronation Oath* to the kings of England:—Sermon being ended, and the King having made and signed the declaration, the Archbishop goes to the King, and, standing before him, administers the Coronation Oath, first asking the King—'Sir, is your Majesty willing to take the Oath?' and the King answering, 'I am willing,' the Archbishop ministereth these questions; and the King, having a copy of the printed Form and Order of the Coronation Service in his hands, answers each question severally as follows:—

Archb. 'Will you solemnly promise and swear to govern the people of this United Kingdom of Great Britain and Ireland, and the dominions thereto belonging, according to the statutes in Parliament agreed on, and the respective laws and customs of the same?'

King. 'I solemnly promise so to do.'

Archb. 'Will you to your Power cause Law and Justice, in Mercy, to be executed in all your Judgments?'

King. 'I will.'

Archb. 'Will you to the utmost of your Power maintain the Laws of God, the true Profession of the Gospel, and the Protestant Reformed Religion established by Law? And will you maintain and preserve inviolably the settlement of the United Church of England and Ireland, and the doctrine, worship, discipline, and government thereof, as by Law established within England and Ireland, and the territories thereunto belonging? And will you preserve unto the Bishops and Clergy of England and Ireland, and to the United Church committed to their charge, all such rights and privileges as by Law do or shall appertain to them, or any of them?'

King. 'All this I promise to do.'

Then the King arising out of his Chair, supported as before, and assisted by the Lord Great

Chamberlain, the Sword of State being carried before him, shall go to the Altar, and there, being uncovered, make his solemn Oath in the sight of all the People to observe the premises: laying his right hand upon the Holy Gospel in the Great Bible, which was before carried in the Procession, and is now brought from the Altar by the Archbishop, and tendered to him as he kneels upon the steps, saying these words:—

'The Things which I have here promised I will perform and keep, So help me God.'

Then the King kisseth the Book, and signeth the Oath.

(See the *Form and Order observed in the Coronation of His Majesty King George IV.*, 4to., London, 1821.)

CORONER. The coroner (*coronator*) is an ancient officer by the common law of England. The name is said by Lord Coke to be derived '*a coronâ*,' because he is an officer of the crown, and hath conusance in some pleas which are called pleas of the crown. In this general sense the chief justice of the Court of King's Bench is by virtue of his office the supreme coroner of all England, and may, if he pleases, hold an inquest, or otherwise exercise the office of coroner, in any part of the kingdom. In this sense also, the Master of the Crown Office in the Court of King's Bench is styled the 'coroner or attorney for the king,' his business being confined to pleas of the crown discussed in that court. But the officers now usually understood by this term are the coroners of counties. In early times the office appears to have been one of great estimation; for, by the Statute 3 Edw. I. c. 10, they are required to be knights, and by the 28 Edw. III. c. 6, they must be 'of the most meet and most lawful men of the county.' By the 14 Edw. III. s. 1, c. 8, 'no coroner shall be chosen unless he have land in fee sufficient in the county, whereof he may answer to all manner of people.' No peculiar qualification is now required. Most commonly there are three or four coroners in each county; but the number varies, and in some there are six or seven coroners.

There are divers coroners for franchises and other separate jurisdictions. The constable of the Tower of London appoints a coroner for the Tower liberty. The coroner for the city and liberty of Westminster is appointed by the dean and chapter. By a charter of Edward IV. the mayor and commonalty of London may grant the office of coroner to whom they please, and no coroner except the city coroner shall have any power in the city.

Coroners of counties are elected under the direction of the Stat. 28 Edw. III. c. 6, by the freeholders in the county courts: the election takes place by virtue of an ancient king's writ, *De Coronatore Eligendo*, returnable in chancery. The 58 Geo. III. c. 95, which made provision for conducting these elections, similar to those for the election of knights of the shire, was repealed in 1844 by 7 & 8 Vict. c. 92, which substituted other regulations. This act applies only to county coroners. The coroners of the City of London and Borough of Southwark, of the Queen's Household and the Verge of the Queen's Palace, and Admiralty coroners are exempted from the operation of the act. Counties may be divided by the justices into two or more districts for the purposes of this act, and alterations may be made in existing divisions; and the queen, with the advice of the privy council, may order that such county shall be divided into so many districts as may be considered convenient, and determine at what place within each district the court for the election of coroner for such district shall be held.

Coroners in counties are elected for life; but if they accept an office incompatible with the duties, such as that of sheriff, or dwell in a remote part of the county, or are incapacitated by age or infirmity, they are removable by means of the writ *De Coronatore Exonerando;* and by the Stat. 25 Geo. II. c. 29, s. 6, they may be removed upon conviction of extortion, wilful neglect of duty, or misdemeanour in their office. The lord chancellor has authority, independently of this statute, to remove coroners for neglect of duty, upon petition presented by the freeholders of the county. (1 Jacob and Walker, 'Reports,' 451.)

The article (G) *Officer* in Comyns' 'Digest' contains a statement of the various duties of the coroner in the king's house, and of the coroner in a county. The most usual duty of coroner is that of taking inquisitions when any person dies in prison or comes to a violent or sudden death; and his duties in this respect are declared by the 4 Edw. I. stat. 2, commonly called the statute *De Officio Coronatoris*. His court is a Court of Record. The provisions of this ancient statute are still in force, and are to be followed by coroners in all their particular directions as nearly as possible at the present day in inquisitions of death. In case of a death happening upon the high sea, inquisitions are taken before the Admiralty coroner, who is appointed by the king or the lord admiral; and the county coroners have in such a case no jurisdiction. The inquisitions taken before the Admiralty coroner are returned to the Commissioners of the Admiralty under Stat. 28 Hen. VIII. c. 15. Coroners ought to sit and inquire into the cause of death of all persons who die in prison. The coroner of the king's household has sole jurisdiction within the verge of the king's courts.

The coroner has authority to assemble a jury by a precept directed to the constables of the hundred or adjoining township, and jurors and witnesses who make default may, under 7 & 8 Vict. c. 92, be fined any sum not exceeding 40*s.* and their names returned to the clerk of the peace, who is to levy the fine. The coroner may also punish witnesses, who refuse to give evidence, for contempt of court. When the jury are assembled, they are charged and sworn by the coroner to inquire, upon view of the body, how the party came by his death. The act for the registration of deaths (6 & 7 Will. IV. c. 86) provides that at every inquest 'the jury shall inquire of the particulars herein required to be registered concerning the death, and the coroner shall inform the registrar of the finding of the jury.' One of the particulars herein required to be registered is the 'cause of death.' The Life Insurances have a direct interest in ascertaining the precise cause of death, and to the community generally it is of

consequence that there should be as little impunity as possible to crime. The coroner must sit at the place where the death has happened. If the jury finds that any person is guilty of murder or other homicide, it is the coroner's duty to commit him to prison for trial, and he must also inquire what lands, goods, and chattels he may have, which are liable to forfeiture for such murder. If a body liable to an inquest has been buried before the coroner has notice of the circumstances of the death, he has authority to cause it to be disinterred for the purpose of holding the inquest, provided he does so within a reasonable time. The coroner has power to exclude persons from his court.

It is also a branch of the coroner's business to inquire into the causes of fires, and also into shipwrecks, and certify whether it is a wreck or not, and who has got possession of the goods. He also inquires into treasure trove. By a section of the 7 Geo. IV. c. 64, authority is given to the court to which the inquisition ought to be delivered to examine in a summary manner into any offence committed by the coroner against the act, and to punish him by fine. The coroner's inquisition may be removed into the Court of King's Bench, and the facts found may be traversed by the personal representatives of the deceased; or the court may make it for any apparent defect. By 7 & 8 Vict. the coroner is prohibited from acting professionally in any case in which he shall have sat as coroner.

For every inquisition taken in any place which contributes to the county rates, the coroner is entitled to a fee of 20*s.*, and by 1 Vict. c. 68, to an addition of 6*s.* 8*d.*, and also to 9*d.* for every mile which he is obliged to travel from his usual place of abode to any other place, for the purpose of taking it, to be paid by order of sessions out of the county rates. If he holds two or more inquisitions at the same place at the same time, he is only entitled to one 9*d.* for each mile of distance. By 7 & 8 Vict. c. 92, the coroner may be paid travelling expenses, although in the exercise of his discretion he may have deemed it unnecessary to hold an inquest. The sum paid to coroners out of the county rates in 1834 was 15,648*l.* In 1838 and 1839 about 35,000 inquests were held in the two years.

By 6 & 7 Will. IV. c. 89, the coroner is empowered to order the attendance of legally qualified medical practitioners upon an inquisition of death, and to direct the performance of a post mortem examination; and, if the majority of the jury are dissatisfied with the first examination, they may call upon the coroner to summon a second medical witness, to perform a post mortem examination, whether it has been performed before or not. The statute also authorises the coroner to make an order for the payment of a fee of one guinea to such witness, if he has not performed a post mortem examination, and of two guineas if he has performed such examination. Medical practitioners are also liable to a penalty of 5*l.* if they neglect to attend.

By the Municipal Reform Act, 5 & 6 Will. IV. c. 76, s. 62, the council of every borough, to which a separate court of quarter-sessions has been granted, is empowered to appoint a fit person, not being an alderman or councillor, to be a coroner of the borough, who is to hold his office during good behaviour.

(Hawkins's *Pleas of the Crown*, book ii. cap. 9; Burn's *Justice*, tit. 'Coroner;' and Jervis's *Practical Treatise on the Office and Duties of Coroners.*)

CORONET, an inferior kind of crown worn by the nobility. Of the coronets of the British nobility, as at present worn, all surround caps of crimson velvet turned up with ermine. That of a duke is a circle of gold, richly chased, having on the edge eight strawberry-leaves of equal height: that of a marquess, a circle set round with four strawberry-leaves and as many pearls on pyramidal points of equal height, alternately: the earl's coronet has eight pyramidal points (five only being seen at a time), with as many pearls on the tops, placed alternately with as many strawberry-leaves, lower than the pearls. The viscount has only pearls, without any limited number, placed on the circle itself all round. A baron has only six pearls set at equal distance. The coronet of the kings of arms is a plain circle of gold, bearing sixteen leaves, eight of which are higher than the others; and on the band, the motto 'Miserere mei, Deus.'

CORONILLA, a genus of plants belonging to the natural order *Leguminosæ*. The species are shrubs or herbaceous plants, with unequally pinnated leaves; the peduncles axillary, bearing an umbel of stalked flowers. *C. emerus*, Scorpion-Senna, is a common plant all over the south of Europe, in hedges and among bushes. It has bright yellow flowers. Its leaves act as a cathartic, resembling the leaves of senna, but are less active. It is a pretty shrub, and well adapted for the front of a shrubbery. It thrives in almost any soil, and blossoms nearly all the year round. *C. varia* is found in meadows and waste places in the south of Europe, and in the Crimea. The leaves have a diuretic action on the system, and also purge. The juice is said to be poisonous when taken in large quantities; although this is the action on the human system, cattle feed on this plant with avidity, and it has been proposed to cultivate it in this country as fodder. It probably does not develope its active secretions in climates north of its native districts. The species of Coronilla are numerous, and are all shrubs or herbs adapted for ornamental cultivation.

CORPORAL (in the French service *caporal*), a non-commissioned officer in a battalion of infantry. The word is derived from the Italian *capo*, signifying a head; and the title denotes that the person who bore it was the chief of a small squadron or party. During the reigns of Mary and Elizabeth the corporal was a kind of brigade-major; but at present he is immediately under the sergeant; he places and relieves the sentinels, and at drill he has charge of one of the squadrons. In the ranks he does the same duty as a private soldier, but his pay is rather higher.

Lance-corporal, originally *lance-spesata*, denoting a broken or spent lance, was a term applied to a cavalry soldier who had broken his lance or

lost his horse in action, and was subsequently retained as a volunteer in the infantry till he could be remounted. He is now merely a soldier who does the duty of a corporal, but without the pay, previously to obtaining the full appointment to that grade.

CORPORATION. A corporation is sometimes called an artificial person, that is, a person which exists by virtue of a legal fiction, for which purpose it must have a name. It is the name which is the artificial person, not the imaginary unity of a certain number of living persons. The purposes for which this artificial person exists are, that property may be held in its name, and consequently the death or change of the persons who administer the property has no effect upon the ownership of the property, which is attached to the artificial person. A corporation may exist or be created for many purposes, such as for education and administration, but these purposes are quite distinct from the capacity which the artificial person has to hold property. The living members of the corporation administer the property and do all the necessary acts for its acquisition and preservation; but the property does not belong to the individuals in definite shares nor to all of them; it belongs to the artificial person or to the name which the corporation has. In the case of joint-stock companies and the like, no shareholder is the owner of a fractional part of the property. His share is an interest which he can transfer to others, or which is transferable by will or intestacy, pursuant to the rules of the corporation. But it is not a share like that of a tenant in common or joint tenant. He is not the owner of an undivided share of the property, for, if that were so, the whole members could divide it among themselves, which they cannot do if the purpose for which the corporation exists is a permanent purpose, and they can never divide it among all the members except pursuant to the terms of the act of incorporation, if it gives them such power.

This is the true notion of an artificial person, which must be distinguished from the living persons, who are sometimes said in common language to compose a corporation. In the English law the notion of a corporation has been singularly confused by the ignorance of judges and writers of the true meaning of the term. The notion was conceived much more correctly by some of the old writers, as Littleton and Coke, than it is at the present day. [College; University.]

Corporations in the English system are either corporations sole, which consist of a single person and his successors, or they are composed of many persons, and are called corporations aggregate. Viewed with respect to the distinction between things spiritual and things civil, all corporations are either ecclesiastical or lay corporations. Lay corporations are subdivided into civil corporations and eleemosynary corporations. Civil corporations are those which have purely a civil object, such as administration, commerce, education, and other like purposes. Eleemosynary corporations may have various objects, but they all agree in this, that they have been endowed for the purposes of distributing the alms or bounty of the founder and other donors. Spiritual corporations are divisible into regular and secular corporations.

A corporation sole implies a succession of single persons, occupying a particular office or station, and each in virtue of his character succeeding to the rights and powers of his predecessor. The king, a bishop, a parson, the chamberlain of London, &c. are examples of such corporations sole. Dr. Wooddesson observes, 'that as so little of the law of corporations in general applies to corporations sole, it might have been better to have given them some other denomination.' In fact, corporations sole are not corporations. If there be a perpetual purpose, as in the case of a church with lands attached to it, the church is an artificial person, which is represented by the living parson, and each parson represents it exactly as his predecessor did. Each parson is the successor of his predecessor. (1 Wooddes. 'Vin. Lect.,' 471, 2.)

The following notice is chiefly confined to the law of corporations aggregate. The legal incidents of such corporations sole, as bishops and parsons, are mentioned under Bishop and Benefice.

The members of cathedral and collegiate chapters are secular ecclesiastical corporations aggregate. Before the Reformation the law recognised a class of ecclesiastical corporations *regular*, consisting of abbots or priors and their respective convents, and apparently the societies of friars or mendicant orders. The heads of these conventual bodies were often distinct corporations sole, as is still the case in many of the modern secular ecclesiastical establishments.

The colleges in Oxford and Cambridge, and incorporated schools and hospitals, are instances of eleemosynary corporations. [Collegium.]

But the largest class of corporations, and those which are most varied in their object and character, are lay and civil incorporations. Among these are the universities of Oxford, Cambridge, Durham, and London, the municipal corporations of different cities and boroughs, the East India Company, the Bank of England, the Colleges of Physicians and of Surgeons, the Royal Society and Royal Academy, the Society of Antiquaries, and numerous commercial and other companies erected by charter or by act of parliament.

A corporation can only be created by the king or an act of parliament. When any such body has existed from time beyond legal memory, it is presumed to have originated in one of these ways. The king creates a corporation by letters patent. Sometimes a corporation is created by implication from the words of an act of parliament; for instance, if certain persons, such as the conservators of a river, are declared to take lands by succession, they are incorporated: for the word 'succession' is opposed to 'inheritance,' and has been construed, though incorrectly, to involve the notion of a corporation. For in a grant, for instance, to a corporation, the word 'successors' is not necessary. In fact the notion of succession contradicts the notion of a corporation. [Succession.] Custom sometimes establishes a corporation, as in the case of churchwardens, who

are a corporation with respect to the goods and chattels of the church. Those corporations which have existed from time beyond legal memory, and have no charter, are said to be corporations by prescription.

The principal incidents of a corporation aggregate are the following:—

1. It can purchase, convey, and hold land or goods.

2. It can become a party to proceedings at law, or to contracts, by its corporate name.

3. The act or assent of the majority is binding on all the rest; such at least is the general rule, wherever the instrument of foundation does not otherwise provide.

4. It signifies its assent, and testifies its corporate acts, by a common seal, without which a contract, as a general rule, is not binding on the corporate body.

5. It can make regulations called by-laws. [By-law.]

6. The particular members of the body are not in general personally responsible for the acts, contracts, or defaults of the corporation, so long as the acts of the corporation are conformable to the powers which are given to it. This exemption from individual liability makes it desirable for commercial and other trading companies to obtain charters of incorporation, by which the members escape the risk of ordinary partnerships.

7. The personal defaults or misconduct of the members cannot in general be visited on the corporate body.

The capacity of holding land is restrained by the statutes of mortmain, which make it necessary to obtain a licence to that effect from the crown or the legislature. [Mortmain.]

The members of the body cannot authorise an injury to be done to another under the sanction of a corporate act, without incurring the usual personal consequences.

The mode of filling up vacancies which occur in the constituent members of the corporate body is determined either by the provisions of the charter of incorporation, or (in the case of immemorial corporations) by ancient usage. The most common and regular method is by election, either by the existing members or by some other body.

In the case of eleemosynary bodies, as colleges, schools, and hospitals, the person, who is appointed to superintend the proceedings, and correct them if necessary, is called a *visitor*. [Collegium.]

In ecclesiastical corporations, the bishop of the diocese is, of common right, the visitor. With regard to lay corporations, such as municipal corporations, trading companies, and similar bodies, their irregularities are left for correction to the ordinary courts of justice. The Court of King's Bench exercises the authority by the writ of mandamus of compelling corporate bodies to do acts which they ought to do, and neglect to do.

A corporation may be extinguished in various ways.

1. A corporation aggregate may be extinguished by the natural death of all the members.

2. Where a body of definite number, constituting an integral part of the corporation, is so reduced by death, or other vacancy, that a majority cannot be present at corporate meetings, the whole body becomes incapable of doing any corporate act, and, according to the better opinion, the corporation is thereby extinguished. The object of this rule of law is to compel the elective body to fill up vacancies without delay, and to secure the attendance of a competent number when the public business is transacted. The rule may be modified and controlled by the charter or other fundamental constitution of the corporation.

3. A dissolution may be effected by a surrender to the crown; at least where the incorporation is by charter, and where all the members concur and are competent to concur.

4. A corporation may be forfeited, where the trust for which it was created is broken, and its institution perverted. Such a forfeiture can only be declared by judgment of the superior courts on process issued in the ordinary course of law, called, from the initial words of the writ, *Quo Warranto*, in which the fact of misuser, if denied, must be submitted to a jury.

The corporations established for the administration of towns are generally called municipal corporations. [Municipal Corporations.] Bodies incorporated for the purpose of commerce, or the profitable investment of capital, such as railway companies, mining companies, banking companies, are Joint-Stock Companies. Any number of individuals, however large, who are associated for purpose of traffic, and are not incorporated, form a partnership, and they are individually liable like the partners of any mercantile firm.

CORPORATIONS, MUNICIPAL. [Municipal Corporations.]

CORPULENCE. [Obesity.]

CORPUS CHRISTI or BENE'T COLLEGE, Cambridge, was founded in the year 1351. The founders were the brethren of two guilds, termed the guilds of Corpus Christi and the Virgin Mary, by which joint name the college was originally called; but soon after its foundation it acquired the name of Bene't College (by which it is still often distinguished) from the adjoining church of St. Benedict, the advowson of which was purchased for the college of Sir John Argentine and Sir John Maltravers. Henry, duke of Lancaster, who was alderman of the above-mentioned guilds, procured from the king a charter for ratifying the endowment of the college. There are 12 fellowships belonging to the college, eight of which are open to the queen's subjects wherever born, two are appropriated to natives of Norfolk, and two to the Norwich scholars on Archbishop Parker's foundation. All the fellows are required to take orders within three years after their election, and the degree of B.D. within eight years after that of M.A. There are 62 scholarships and exhibitions belonging to this society. The stipends of these scholarships and exhibitions are various. The greater part are under 20*l.* per annum. There are eleven benefices in the patronage of this college. The number of members upon the boards at the close of 1847 was 273.

The valuable manuscript library left by Arch-

bishop Parker to this college is under certain particular restrictions.

This college, situated in Trumpington Street, formerly consisted principally of one court; and an ancient chapel built in 1578 at the expense of Sir Nicholas Bacon. The college however, being very ancient, and falling rapidly into decay, was renewed in the Gothic style from the designs of William Wilkins, the old court being suffered still to remain: the first stone of the new building was laid in 1823. The great west front in Trumpington Street is 222 feet in length. In the centre is an entrance gateway flanked by two towers leading into a quadrangle 158 feet long by 129 broad, containing the chapel, library, hall, master's lodge, and 47 sets of apartments for the fellows and students.

The visitors are the vice-chancellor of the university and two senior doctors in divinity; in extraordinary cases, the queen.

(*Cambridge University Calendar* for 1848; *Cambridge University Guide*, 1845.)

CORPUS CHRISTI COLLEGE, Oxford, was founded in 1516, by Richard Fox, bishop of Winchester, for a president, 20 fellows, 20 scholars, and 2 chaplains. The fellows are elected from the scholars, and the scholars from certain specified dioceses and counties. There are besides 4 exhibitions not confined to counties.

The main buildings of this college consist of the quadrangle, erected by the founder, including the hall, chapel, and library. An additional building, looking to Christ Church walks, was erected at the expense of Dr. Turner in 1706.

The total number of benefices in the gift of this society is 22. The number of members on the books in January 1848 was 134. The visitor is the Bishop of Winchester.

(*Oxford University Calendar*, 1848; *Oxford University Guide.*)

CORPUS JURIS CIVILIS. The term Corpus Juris (literally a body of law) was introduced in the middle ages to signify a book which comprehends several collections of law. There are two principal collections to which that appellation is given, the Corpus Juris Civilis and the Corpus Juris Canonici. [CANON LAW.] The term Corpus Juris Civilis designates the book in which the different parts of the legislation of the Emperor Justinian are collected, and which, being considered as one whole, contains the main body of the Civil or Roman law. According to this definition, the Corpus Juris Civilis consists of the compilations of the Codex, Pandect or Digest, Institutes, and Novels, which were made under the direction of the Emperor Justinian.

Justinian himself, regarding each part of his legislation as a separate collection only made for the purpose of completing former compilations, never thought of giving a common title to them all. Savigny, in his history of the Roman law in the middle ages, asserts that the term Corpus Juris Civilis was used in the twelfth century. Dionysius Gothofredus, a French jurist, is commonly considered as the first who, in his edition in the year 1583, at Lyon, adopted the term Corpus Juris Civilis as a general title for the collections of Justinian. From that time this title has always been in use.

The component parts of the Corpus Juris are the Digest, Code, and Institutes, and the separate Novellae which were promulgated after these three works. But the Corpus Juris is only received as law by those states which receive the Roman law within the limits and in the peculiar form which was given to it by the school of Bologna; for the Corpus Juris only became recognised as the common law of Europe in the shape which this school gave to it. The editions of the Corpus Juris contain however more than the Roman law as established by the school of Bologna.

There are numerous editions of the Corpus Juris: it was printed very soon after the invention of the art, but at first only separate parts were published. The oldest edition that we know of is that of the Institutes, by Peter Schœffer, in Mentz, of the year 1468. There is a copy of this edition on vellum in the King's Library, British Museum. The larger capital letters throughout the book are illuminated, and some of them with gold. Till the year 1476, all the parts of the Corpus were printed separately. The first edition which contained the whole is that by Honate, at Milan, of the years 1482 and 1483, but still not under a general title. Till the year 1518 all the editions were printed with glosses, but after that date the glosses were commonly omitted. The last edition with glosses is of the year 1627. For a complete list of the editions, see Beck's 'Index.' The best known edition of the Corpus Juris is that of Dionysius Gothofredus. He edited the Corpus Juris several times, with notes, 1583, Lyon; without notes, Lugd., 1589. His editions are often counterfeited; the best is Frankfort on the Main, 1663.

CORRADI, DOMENICO. [GHIRLANDAIO.]

CORRECTION, HOUSES OF. [TRANSPORTATION.]

CORREGGIO. ANTONIO ALLEGRI was surnamed Correggio from the place of his birth, which probably took place towards the end of the year 1493, or early in 1494. Correggio's life is involved in the most impenetrable obscurity. It is quite uncertain who was his first instructor. Francesco Bianchi, Lombardi, his uncle Lorenzo, and Mantegna have been all named. Correggio was married, and had a son and three daughters. He died on the 5th March, 1534, and was buried in the church of St. Francis at Correggio.

It is as uncertain, as any thing else in his life, whether Correggio formed his more perfect style entirely from his own natural taste, with no greater model than Mantegna, or whether he had access to the works of the great painters of his time, and the antique, and received his best lessons from them. At all events, he formed a style completely his own, remarkable for masterly chiaroscuro, exquisite colouring, and the most graceful design.

Correggio's pictures are not so numerous as those of some painters. The cupola of the cathedral at Parma is painted with an 'Assumption of the Virgin,' of which the numerous beauties, the masterly foreshortening, the grace, the colour, and

the design, so excited Titian's admiration, that he is reported to have said, 'If I were not Titian, I would be Correggio.' In the gallery at Dresden are the 'Notte,' or rather Dawn—a grand picture on the subject of the Nativity, and a masterpiece of chiaroscuro—and a little cabinet picture, the 'Penitent Magdalen,' in which the saint is represented lying on the ground reading. In the National Gallery in London are two of his best pictures, the 'Education of Cupid' (a duplicate) and an 'Ecce Homo.' The Madonna in the latter is painfully true to suffering nature, but redeemed by his usual beauty of form and expression. Two of his most celebrated pictures were destroyed, it has been said, by order of the Regent Duke of Orleans, for the too great freedom of the design—the 'Danae,' and the 'Io,'—a strange story to be told of a man of his character. The former was pieced together again by Coypel; of the latter a duplicate still exists.

(Tiraboschi; Mengs; Ratti; Lanzi; and *Sketches of the Lives of Correggio and Parmigiano.*)

CORREZE, a department of France formed out of Bas-Limousin, is bounded N. by the departments of Haute-Vienne and Creuse, E. by those of Puy-de-Dôme and Cantal, S. by the department of Lot, and W. by that of Dordogne. It extends between 44° 55′ and 45° 44′ N. lat., 1° 13′ and 2° 22′ E. long.; its greatest length from N.E. to S.W. is 64 miles, from E. to W. 51 miles. The area is 2250 square miles, and the population in 1841 was 306,480, which gives 136.21 to the square mile, being 31.8 below the average per square mile for all France.

The district that occupies the east and north of the department comprising the arrondissements of Ussel, and the greater part of that of Tulle, is called *La Montagne*, from its being covered with the Auvergne Mountains and their western offshoots which separate the waters that flow to the Loire from those that feed the Dordogne. These regions present caverns, ravines, torrents, cascades, and wild, bare, and barren summits, which rise in some places to the height of 4000 feet, and are covered with snow for several months in the year. The lower slopes are covered with forests in which the chestnut thrives in favourable situations; the high plains and valleys produce some good pasture; but the general character of all this portion of the department is extreme sterility, the shallow, cold, and hungry soils yielding but scanty crops of rye, oats, buckwheat, hemp, and flax. Neither grape nor any other fruits ripen thoroughly, except walnuts, and they are of a small size. The south and south-west of the department called *Le Pays Bas*, or the low country, has a richer soil and a denser population. Here the vine and other fruit-trees flourish, and, in addition to the cereal grains before mentioned, wheat, barley, and maize are produced. Horned cattle are reared in considerable numbers in the low lands, sheep and goats on the mountain pastures. Among the wild animals are the wild boar, the wolf, and the fox; reptiles are very numerous, and among them several varieties of the adder. Birds, both native and migratory, exist in great numbers and variety. Throughout the whole department the climate is cold and damp; fogs are almost always hovering over the courses of the numerous rivers and the saturated soil of the low lands; the nights, even in the middle of summer, are cool, and white frosts are very prevalent. The habitations of the peasantry are wretched in the extreme.

The Dordogne forms the eastern boundary of the department for a considerable way, separating it from those of Puy-de-Dôme and Cantal; it then crosses the south-eastern angle of the department, and enters that of Lot near the Point, where it is joined by the Cère from the left bank. Its principal feeders within this department are the Diège, the Troussonne, the Lazège, the Doustre, and the Loyre, all of which rise in the north-east of the department and fall in on the right bank. The Corrèze, from which the department is named, rises in the mountains near Meymac, and, flowing S.W. past Tulle and Brives enters the Vezère on its left bank near the western boundary of the department. The Vezère drains the north and north-west of the department; it rises near Chavagnes in the arrondissement of Ussel, and runs S.W. past Treignac, Uzerche, and Larche, near which it enters the department of Dordogne; here continuing in the same direction, it passes Montignac, a few miles S.W. of which it falls into the Dordogne from the right bank. The Haute-Vezère, a feeder of the Isle, rises in the west of the department near Lubersac. None of these rivers are navigable except the Dordogne, which is navigable for barges from Argentat. The department is crossed by 5 royal and 5 departmental roads.

The department is rich in *minerals*, especially in coal, iron, lead, granite of different colours, porphyry, alabaster, &c.; but of this wealth little advantage is taken from want of facilities for transport. The iron and coal raised is chiefly used in the department. Fire-arms, leather, glass, bricks, coarse woollens, wax-candles, and nut-oil are the principal articles of industrial produce. About 650 fairs are held in the year, at which, besides the articles named, cattle, horses, mules, linen yarn, chestnuts, &c. are sold.

The whole surface of the department contains 1,440,188 acres, distributed among 58,130 proprietors and subdivided into 1,024,133 parcels. Of this area 302,566 acres are under various crops, 384,000 are capable of cultivation, 180,561 consist of natural grass land, 406,082 of heaths and moors, 90,366 of woods and forests, and 37,569 acres are under vineyards, which yield 5,566,000 gallons of inferior wine yearly.

The department is divided into 3 arrondissements, which, with their subdivisions and population, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Tulle	12	118	130,853
Brives	10	101	113,581
Ussel	7	74	62,046
Total	29	293	306,480

In the arrondissement of Tulle the chief-town is Tulle, which stands on the Corrèze at a distance of 291 miles S. from Paris in 45° 16′ N. lat., 1° 46′ E. long., and has 10,444 inhabitants. The town, which is built on the slope of a hill, is ancient and ill-laid out: the houses are in general old and ugly, but some are remarkable for their Gothic structure and sculptured ornaments. The most important buildings are—the cathedral; the court-house; the departmental prison; and the theatre. The town is the seat of a bishop, has tribunals of first instance and of commerce, ecclesiastical and communal colleges, and a pretty promenade along the Corrèze, which is here joined by the Solane and is crossed by several bridges. It is a place of some manufacturing industry, and has a good trade in cattle and agricultural produce; but it is chiefly noted as the centre of a manufacture of fire-arms, which gives employment to above 1000 workmen in the town and neighbouring districts. On the hill above the town there is a high square tower said to be of Roman construction, and near the tower is the public cemetery. Argentat, a thriving town on the right bank of the Dordogne, which is here crossed by a suspension-bridge, has 3197 inhabitants, who trade with Bordeaux in oak staves, corn, charcoal, and coal raised in the neighbouring mines. Treignac, on the left bank of the Vezère, has an ancient castle; a college; and 3040 inhabitants, who trade in wool, wax, cattle, sheep, &c., and manufacture hats, stockings, and woollen yarn. About two miles above the town the Vezère, issuing from a narrow rocky defile, descends to a level 100 feet lower at a single bound. Uzerche, a pretty town further down the Vezère, occupies a very picturesque site, and has a college and 3237 inhabitants. The houses are well built, covered with slates, and many of them decorated with turrets.

In the arrondissement of Brives, the chief town is Brives-la-Gaillarde, which stands in a fertile valley on the left bank of the Corrèze, 19 miles S.W. from Tulle, and has 8821 inhabitants. A circular avenue, formed of splendid elms and bordered with pretty houses built of cut stone, surrounds the town, the interior of which disappoints the expectation thus raised, as the streets are narrow and irregular; but the houses in general are well and substantially built. The best buildings are, the college; the church of St.-Martin; the hospital; a house built during the English occupation, which is decorated within and without with curious Gothic sculptures; and the Belvedere Tower, from which there is a fine view of the town, the valley of the Corrèze, the vineyards, and wooded hills of the vicinity. The town has an ecclesiastical seminary; trades in timber, wine, chestnuts, violet mustard, truffles, turkeys, wool, cattle, pigs, &c.; and manufactures cotton yarn, nut-oil, and wax-candles. Coal mines are worked near the town. Alassac, 9 miles N. from Brives, has 4209 inhabitants who are chiefly engaged in tillage and the culture of the vine. Beaulieu, on the right of the Dordogne, has 2513 inhabitants, and an old church which is decorated with very remarkable sculptures. Donzenac, 6 miles N. from Brives, prettily situated among vineyards and plantations of walnut, chestnut, and poplar trees, has 3253 inhabitants, who are employed in agriculture and in the slate quarries near the town. Joniliac, on the western border of the department and near the lead mines, has 2455 inhabitants. Lubersac, near the Haute-Vezère, has a population of 3768. Pompadour, a small village near Lubersac, is noted for its castle, which was bestowed by Louis XV. on one of his mistresses, who took her title of marchioness from it. Meyssac, 12 miles S. from Brives, has 2591 inhabitants, who raise great quantities of walnuts. A little W. of Meyssac is the village of Turenne, commanded by an ancient castle which belonged to the dukes of Aquitaine, the ancestors of Marshal Turenne, who took his title of duke from it. Vigeois, 8 miles from Brives, has paper mills and 2508 inhabitants.

In the arrondissement of Ussel, the chief town Ussel is situated among mountains between the Diège and the Sarsonne, which unite and fall into the Dordogne near Bort. It has a tribunal of first instance, a college, and 4261 inhabitants, who manufacture coarse woollens, canvas, nails, and leather, and trade in hemp, skins, wax, tallow, timber, oak staves, &c. Bort, on the right bank of the Dordogne, has 2367 inhabitants; near this place is a hill called Orgues-de-Bort, which is composed of enormous basaltic columns. Meymac, in a pretty valley 10 miles W. from Ussel, has a hospital, an ancient church, and 3389 inhabitants. Neuvic, 13 miles from Ussel, has a population of 2918.

The department forms the see of the bishop of Tulle; is under the jurisdiction of the Cour Royale and University Academy of Limoges, and is included in the 19th Military Division, of which Clermont is the head quarters. Under the late Monarchy it returned 4 members to the Chamber of Deputies; but now, under the Republic, it returns 8 members to the National Assembly.

(*Dictionnaire de la France; Statistique de la France; Annuaire pour l'an* 1847; *Decree of the Provisional Government of the French Republic.*)

CORRIB, LOCH. [GALWAY.]

CORRIDOR, from the Italian *corridore*, signifies a gallery or passage-way leading to apartments independent of each other. In all large buildings containing numerous apartments corridors are necessary, either closed or open. The corridor round the great Cortile, or open court, of the Cancellaria at Rome, designed by Bramante, consists of an open gallery supported by columns.

CORRIGI'OLA (diminutive of *corrigia*, a shoe-string), a genus of plants belonging to the natural order *Paronychieæ*. The species are procumbent glaucous herbs, with alternate stipulate leaves. *C. littoralis*, Strapwort, a British species, is found on sandy shores in England, but is not an abundant plant. There are three or four other species described, natives of America and Africa.

CORSET, an articles of dress for compressing, under the pretext of supporting, the chest and waist, worn chiefly by females, but also sometimes by effeminate individuals of the other sex. It consists of cloth made to surround the body, stiffened by whalebone or other means, and tightened by a lace. The advantages arising from its

use are trifling, if any; the disadvantages manifold and serious.

CORSEUL. [CÔTES-DU-NORD.]

CORSICA, or, as the French call it, *Corse*, an island in the Mediterranean, about 180 miles E. from France, of which it forms a department, extends between 41° 24′ and 43° 7′ N. lat., 8° 31′ 47″ and 9° 33′ E. long. The northern part of the island consists of a mountainous projection, only 9 miles broad at its widest part, 23 miles in length, and terminating in the promontory of Cap Corso. From this point to the strait of Bonifacio, which separates Corsica from Sardinia, the whole length of the island is 116 miles; its greatest breadth is 52 miles. The area is 3378 square miles, and the population in 1841 was 221,463, which gives only 65.38 to the square mile. A great number of small islands are scattered round the coast.

The western coast is high, and indented by numerous gulfs, bays, and harbours; while the eastern coast is low, and presents a continuous line, broken only towards the north by the lake of Biguglia, and near the southern extremity by the harbour of Porto Vecchio and the Gulf of Santa Manza. Here and there, in picturesque situations along the sea-shore, are seen a great number of towers, which were erected during the Genoese occupation of the island, and served to give notice by fire-signals of the approach of the Barbary cruisers, to whose incursions the island was greatly exposed. The interior of the island presents a mass of mountains, broken by abrupt gorges, and inclosing many beautiful valleys, through each of which a torrent or a rapid brook hurries along; steep frowning precipices, re-echoing the roar of the waters struggling past their base; and extensive forests, which present in their native luxuriance a rich contrast with the bare and rocky heights that here and there spring up above the general elevation of the mountain range.

The principal mountain chain, the ramifications of which cover the greater part of the surface of the island, runs due south from Cap Corso to about 42° 37′ N. lat.; it then turns west as far as Monte Grosso, which attains the height of 6500 feet above the sea. From this point it again runs south under the name of the Monti-di-Frontogna to the summit of Paglia-Orba, which is 8697 feet high; hence it turns south-east as far as the pass of Foce-di-Verde, in about 42° N. lat., having passed its culminating point in Monte Rotundo, which reaches to the height of 9068 feet. From Foce-di-Verde its course is due south to its termination in the strait of Bonifacio. The summits are covered with snow for several months in the year. From this chain numerous rapid rivers run in all directions to the sea: the principal of them are the Golo and the Tavignano, on the eastern side; the Valinco, Taravo, Pruneli, Gravona, Liamone, and Valinco, on the western side. The forests, which clothe the mountain sides, consist chiefly of oak, larch, beech, chestnut, pine, cork, turpentine-tree, wild olive, &c. The higher part of the mountains produces pasture, in which aromatic plants abound; and on the very crest of the chain lakes are found well stocked with fish. On these pastures during the summer the herdsmen feed their sheep, goats, and pigs, resting at night in some of the numerous caverns in the rocks. The climate is excellent, the temperature varying of course with the elevation; and the air, except in a few marshy districts on the east coast, is pure and healthy: on an average 237 days in the year are fine and clear, 18 are rainy, and 110 cloudy. The prevailing winds are the south-east and south-west, which sometimes blow with great violence.

The surface of the island comprises 2,161,684 acres, of which 8514 are planted with olives, 24,427 with vines, 68,322 with chestnuts, 355,837 are under corn cultivation, 1090 are artificial meadows, 572,603 are covered with rocks and forests, 515,606 are natural grass land not susceptible of cultivation, and 14,551 are covered with waters. The remaining 600,734 acres are overgrown with a dense tangled underwood, consisting of arbutus, cistus, laurel, myrtle, heath, broom, &c., and forming an almost impenetrable cover, called by the natives *maquis*, which is easily removed by burning; but, if the land thus cleared be not kept in constant cultivation, it soon returns to its former state. The soil, except in the lower valleys where it is alluvial, is stony but fertile. Wheat maize, and barley are the chief cereal grains. The yearly produce of wine is 6,600,000 gallons, some of which, especially that of Cap Corso, is of good quality; but in general it is carelessly made, ripe and unripe grapes being put indiscriminately into the wine-press. Of chestnuts, an important article of food, the produce is 47,000 quarters. The chestnut-tree is one of the most magnificent vegetable productions of the island. The mulberry is cultivated for the production of silk. The cotton-shrub, sugar-cane, indigo, tobacco, and madder are also cultivated. The orange, citron, fig, almond, pomegranate, date-palm, and other fruit-trees, flourish, and their produce is largely exported. The chestnuts and walnuts of the island are of the best quality and of the largest size. A good deal of excellent honey and wax is gathered.

Mules are the principal beasts of burden; the horses and asses are small. Cows do not thrive, owing either to neglect or the nature of the pasturage; they give little milk, and their flesh is bad. Sheep and goats are very numerous, and are much prized for the delicacy of their flesh. The sheep are black, and generally have four, sometimes six, horns. The shepherds' dogs and stag and boar hounds of the island are of very superior breed. Pigs are very numerous. Among the wild animals are foxes, wild boars, deer, hares. Partridges, woodcocks, snipes, guinea-fowl, pheasants, quails, &c. are very abundant. Eagles, vultures, and other birds of prey, haunt the mountain summits. Reptiles are numerous; but the only venomous animal in the island is a black spider called *malmignate*, the bite of which is said to be mortal. Great quantities of tunny, pilchards, anchovy, and other fish, are taken along the coast, and sent to the markets of Florence, Naples, and Genoa.

Iron, lead, antimony, black manganese, granite varying in colour from gray to red, porphyry, white marble, limestone, jasper, emerald, amian-

thus, &c., be found. There are several hot and cold mineral springs. Of manufacturing industry there is little. A little iron is manufactured from ore brought from the island of Elba, for no mines are worked by the Corsicans. The island has several oil and flour-mills, tanneries, and brick-works; 2 establishments for the manufacture of soap, and 1 for making glass. These articles, together with turnery, pitch and tar, and bad cheese, are almost the only industrial products. The commerce consists of the agricultural produce, and brandy, olive oil, dried fruits, wax, salt fish, coral, ship-timber, myrtle leaves, orange flowers, lichen, tanned hides, goat-skins, deals, &c. No fairs are held in the island.

The island is divided into 5 arrondissements, which, with their subdivisions and population, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Ajaccio . . .	12	73	51,040
Sartene . . .	8		27,220
Bastia . . .	20	113	67,517
Calvi . . .	6		23,024
Corté . . .	15	110	52,662
Total . . .	61		221,463

The chief towns are—AJACCIO, the capital: Bogognano, among the hills on the left of the Gravone, which has 2462 inhabitants: BASTIA: Calvi, a small fortress on the western coast at the head of the Gulf of Calvi, which has some trade, a college, and a population of 2000: Calenzana, in a valley near Monte Grosso, which has 2250 inhabitants: Isola-Rossa, on an island of reddish coloured rocks joined to the main land by a bridge, which is a place of some trade, and has a good harbour formed by a mole: Corté, a fortress in the interior, on the left bank of the Travignano, which was formerly the capital of the island; it is situated on the slope of a hill a few miles north-east of the Monte Rotondo, and above a valley abounding in the choicest productions of the island; the town has a tribunal of first instance, and 4036 inhabitants; it is supplied with water by an aqueduct 2½ miles long: Sartene, about 30 miles S. from Ajaccio, not far from the left bank of the Valinco, which is surrounded with old walls, and has a tribunal of first instance, and 3235 inhabitants: Olmeto, which stands near the Gulf of Valinco, in a fertile and healthy district, has 2000 inhabitants: Bonifacio, a sea-port town and fortress, which stands on the extremity of a rocky peninsula, 200 feet above the sea at the western entrance of the Strait of Bonifacio; it is a place of considerable trade in corn, olive oil, wine, &c., and has a population of 3135; the caverns and grottoes below the town are very curious and extensive: Porto Vecchio, at the bottom of a deep wide bay on the east coast, which has the best harbour in the island, and a population of 2148; it is very unhealthy in summer; a good deal of salt is made near this town.

The only roads in the island are the following:—one from Bastia to the village of S. Fiorenza on the west coast, crossing the mountains by the pass called Bocca San Antonio: a second runs south from Bastia, then up along the left bank of the Golo, which it crosses a few miles north of Corté; having passed through Corté, it gains the western side of the mountain chain by the fortified pass of Bocca di Bogognano, and, running along the right bank of the Gravona, terminates at Ajaccio: and a third, which coincides with the preceding, for a few miles south from Bastia, as far as the river Bovinco; having crossed this river, it runs along and within view of the east coast all the way to Bonifacio, where it turns north-west, and, passing through Sartene and Olmeto, terminates at Ajaccio. The other roads are mere tracks.

The island is called Kurnos by Herodotus (i. 165; vii. 165). The Phœnicians, and after them the Carthaginians, made themselves masters of it. In B.C. 231, it came under the power of the Romans, who gave it the name of Corsica. At the decline of the Roman empire the island was seized by the Goths, who held it till the eighth century, when they were dispossessed by the Saracens. In the reign of Pope Gregory VII. it was annexed to the Holy See, by which it was given first to the Pisans, and in 1297 to Jayme II., king of Aragon. The Genoese, after many previous unsuccessful attempts, conquered the island in 1481, and, notwithstanding the joint efforts of Henri II. of France and the Turks in the 16th century to deprive them of it, held it till 1755. In this year the Corsicans, headed by General Paoli, shook off the yoke of the Genoese. The latter, in 1768, resigned their claims to the island in favour of the French, who, after a desperate resistance from the patriots, subdued it in 1769. On the breaking out of the French Revolution in 1793, the patriots, commanded by Paoli and assisted by the English, swept the French from the island, which was then placed under the protection of the British crown; but in 1797 the French again appeared, and drove out the English in less than six weeks. Since then, with the exception of a short occupation by the English in 1814, the island has remained annexed to France, and this annexation was confirmed by the Treaty of Paris in the last-mentioned year.

The island forms the see of the bishop of Ajaccio, is under the jurisdiction of the Cour Royale of Bastia and of the University Academy of Ajaccio, and forms the 17th Military Division, of which Bastia is head-quarters. It returned 2 members to the Chamber of Deputies under the late Monarchy, but it now has 6 representatives in the National Assembly under the Republic.

(*Dictionnaire de la France; Géographie Universelle; Annuaire pour l'an* 1847; *Decree of the Provisional Government of the French Republic.*)

CORT, CORNELIUS, a designer and engraver, was born at Horn in Holland in 1536. He worked in his youth for Jerome Cock, a print-seller of Antwerp. He went later, about 1566, to Italy, where in Venice he was received by Titian into his house, and engraved several of his pictures for him, in, at that time, an unusually large size; they are dated 1566. Cort however

settled finally in Rome, and established a school of engraving there. His works, for their size and style, and considering the comparative shortness of his life, forty-two years, are very numerous; they exceed one hundred and fifty. He made the first engraving after the Transfiguration by Raphael; he engraved also the Battle of the Elephants, and the Battle of Constantine, after Raphael.

(Gandellini, *Notizie Istoriche degli Intagliatori*, &c.; Heineken, *Dictionnaire des Artistes*, &c.)

CORTE'. [CORSICA.]

CORTES, the name of the assembly of representatives of the Spanish nation. These assemblies have been variously constituted in different ages, and in the different kingdoms into which Spain was divided till the time of Ferdinand and Isabella. The cortes of Castile and Leon and those of Aragon were the principal.

They have been repeatedly suspended for long periods, and their constitution frequently modified. During the invasion of Spain by the French under Bonaparte, they played an important part, and framed a constitution known as 'the Constitution of 1812.' The present electoral law of the Cortes was passed in 1845. By this law the qualification of deputies is the possession of 12,000 reals (120*l.*) per annum, from real property or the payment of 1000 reals (10*l.*) in direct taxes. The qualification for electors consists in the payment of 400 reals (4*l.*) per annum, in direct taxes; but members of the learned professions, retired officers in the army and navy, and persons in the employment of government or in active service, who have a salary of 15,000 reals (150*l.*) and upwards, are qualified if they pay 200 reals (2*l.*) a year direct taxes. When the number of electors in a district does not amount to one hundred and fifty, that number is to be made up by adding the highest tax-payers. Both deputies and electors must be twenty-five years of age. The number of persons who pay 400 reals direct taxes is said to be very small in many parts of Spain, and the admission to the electoral franchise of persons in the employment of government with a salary of 150*l.* a year is calculated to neutralise the independent opinions of the country, and may sometimes have the effect of keeping in power a government adverse to the general interests. By this electoral law the country is divided into 306 electoral districts, each containing about 40,000 inhabitants, and each district returns one member. This is considered an improvement upon the plan of returning the deputies by provinces.

The cortes of Portugal was nearly the same as those of Spain, and like them fell into disuse. In 1820, while King João VI. was in Brazil, a military insurrection broke out in Portugal, and a Constitution was framed in imitation of the Spanish one of 1812, but it was soon after upset. After the death of King João, his son, Don Pedro, gave a charter to Portugal, established a system of popular representation, with two houses; this charter was afterwards abolished by Don Miguel, and again re-established by Don Pedro; but some changes have subsequently been made in it.

CORTES, HERNAN, was born in 1485, at Medellin, a village of Estremadura, in Spain. He was first sent to study law at Salamanca; but in 1504 he joined his relative, Ovando, who had been appointed governor of Hispaniola. In 1511 he distinguished himself under Velasquez in the conquest of Cuba, and in 1518 was selected by this governor to undertake the conquest of Mexico, which had just been discovered by Grijalva. Accordingly, Cortes set sail from St. Jago de Cuba, November 18, 1518, with ten vessels, ten pieces of cannon, eighteen horsemen, 600 infantry, thirteen only of whom were musketeers, and the rest cross-bowmen. On March 4, 1519, he reached Cozumel, and proceeded up the river Grijalva, or Tabasco. Velasquez, soon after he had despatched his lieutenant with the brilliant prospects of conquest, revoked his commission, and attempted to get him brought back under arrest; but the vigilance of Cortes frustrated all the schemes of the governor.

Having taken the town of Tabasco, with much slaughter, he received from its cacique gold and provisions, and twenty female slaves. Advancing into the interior, Cortes met at San Juan de Ulua some Mexican chiefs, who were anxious to know his intentions. Cortes laid great stress upon the importance of his mission from the great monarch of the east, and the necessity of his waiting upon their king.

During the negotiations for his progress to the capital, Cortes founded the colony of Villa Rica de Vera Cruz, and defeated the faction of the partizans of Velasquez, who, in the midst of the expedition, were in full readiness to revolt; and he secured the adherence of his followers, by showing them there was no other chance of safety than in union and conquest. Cortes moreover gained over the caciques, who were impatient of the Mexican yoke. He continued to advance, defeated the Tlascalans in a bloody battle, and, detecting a plot laid against him in the town of Cholula, destroyed 6000 of the inhabitants. The perplexity of the Mexican councils increased with the boldness of the invaders, who were now regarded as those descendants of the sun, destined by prophetic tradition to come from the east, and subvert the Aztec empire. Accordingly, on November 8, 1519, they were received at Tenochtitlan, the Mexican capital, as divinities. Soon after, however, on pretence of a Spaniard having been murdered, and his head paraded through the country, Cortes seized the person of the Emperor Montezuma, and, though he protested his innocence, loaded him with irons. Subsequently Montezuma acknowledged Charles V. as his lord, but he constantly refused to embrace Christianity.

After six months' occupation of Mexico, when the danger of the Spaniards had increased, a large force was sent by Velasquez against Cortes: this force Cortes surprised and defeated; he took Alvarado the general prisoner, and induced most of the men to follow him as their leader. Thus reinforced, he returned to Mexico, but was forced to retreat by a revolt in which Montezuma lost his life while attempting to appease his subjects. This success of the Mexicans led to the battle which they fought and lost in

the plain of Otompan or Otumba, July 7th, 1520. This victory enabled Cortes, with the assistance of the Tlascalans, to attack Mexico again six months after his retreat, and to retake it August 13, 1521, after seventy-five days of fierce and almost daily fighting. The natives once more, reduced to despair, rose again, and again they were defeated by superior discipline, though on no other occasion did native Americans so bravely oppose European troops.

Cortes returned to Spain in 1528, where, though he had many enemies, he was received with much respect, and made Marquis of the rich Valle de Oajaca, but in 1530 had to return to Mexico, when he paid some attention to maritime discovery, and examined the Gulf of California. He returned to Spain in 1540, when he was received by Charles V. with cold civility, and by his ministers with insolent neglect. He accompanied however this prince in 1541 as a volunteer in the disastrous expedition to Algiers, and his advice, had it been listened to, would have saved the Spanish arms from disgrace, and delivered Europe three centuries earlier from maritime barbarians. Cortes died near Seville, December 2, 1547, in the 63rd year of his age.

(Robertson, *History of America;* Herrera, *Historia de las Indias Occidentales;* Solis, *Historia de la Conquista de Mexico.*)

CORTO'NA, an episcopal town of about 5000 inhabitants, in the Tuscan province of Arezzo, is built on the slope of a steep hill facing the south, and commanding a splendid view of the Val-di-Chiana, and of the Lake Thrasymenus. The most remarkable buildings are—the cathedral, which dates from the 11th century; and the several churches and convents, all of which are decorated with fine paintings. The town is famous for an academy called Academia Etrusca, which publishes its memoirs, and possesses fine collections of ancient Etruscan remains, and a library containing some valuable manuscripts, among which is one of the 'Divina Commedia' of Dante.

This city occupies the site of the ancient *Corythus*, which was one of the twelve cities of the Etruscan league, and is mentioned by Virgil (Æn. vii. 209). It is surrounded by walls, two-thirds of the extent of which are of Cyclopean architecture, and the rest of ancient Roman or of modern construction. Since the Val-di-Chiana has been effectually drained, the neighbourhood is healthy, and is not surpassed in fertility by any part of Europe.

CORTO'NA, PIE'TRO DA. *Pietro Berretini*, called Pietro da Cortona, was born Nov. 1, 1596, at Cortona. His first master was Antonio Commodi, but he afterwards studied under Ciarpi, at Rome. Cortona afterwards travelled, and stayed some time in Florence, but settled finally in Rome, and enjoyed the patronage of successive pontiffs, until Alexander III. made him a knight. He died, May 16, 1669, full of wealth and honour.

His style of drawing is free, bold, and vigorous, and even coarse; seldom finished in any except the most conspicuous parts. In design he is learned and masterly, though somewhat mannered and overcharged. His colour is sober and harmonious. His principal works are at Rome, in the Barberini and Sacchetti palaces, and at Florence, in the Pitti palace.

Cortona practised architecture as well as painting. He was buried in the church of S. Martin at Rome, which is considered his best architectural work.

CORUNDUM. Several substances differing considerably in colour, and sometimes in form, but nearly agreeing in composition, are classed together under the name of corundum, which is that given to the common variety by the natives of India.

Sapphire, of which the chief varieties are the *white*, transparent or translucent; the *oriental*, blue; *oriental amethyst*, purple; *oriental topaz*, yellow; *oriental emerald*, green. The sapphire occurs in rolled masses and crystallised, and the primary form is a slightly acute rhomboid, presenting a great variety of secondary forms. Its specific gravity is 3.975 to 4.161; it possesses double refraction, and is inferior in hardness only to the diamond. *Ruby* is of a rose-red colour, and generally occurs in six-sided prisms. *Common corundum*, or *adamantine spar*, is sometimes nearly colourless, and rather translucent; it presents great variety of colour, but is most commonly greenish or grayish, occasionally brown or red, rarely blue. It is used in the East Indies for cutting and polishing precious stones, and also granite and other hard rocks. *Emery* is regarded as amorphous corundum. Its colour is usually gray; its lustre is somewhat glistening. Its specific gravity is about 3.66 to 4. When ground to powder, it is used in polishing hard bodies. Alumina forms about nine-tenths of all varieties of Corundum.

CORUÑA, LA, called by the English Corunna and formerly the Groyne, the capital of the Spanish province of Galicia, stands on the neck of a peninsula, defended by a chain of bastions, at the entrance of the Bay of Betanzos, and at the head of a spacious and secure harbour, in 43° 23′ N. lat., 8° 20′ E. long., and has 23,000 inhabitants. It is the residence of the Captain-General of Galicia, and the seat of the Audiencia, or supreme court of justice of the province. Its commerce increased considerably by the opening of the American trade. It has still extensive manufactures of linen and baizes, and carries on considerable fisheries. The town consists of an upper quarter, which contains the chief government offices and the churches of Santiago and Santa Maria; and a lower or new town, which is well built, principally of granite. The town is abundantly supplied with provisions, and is much frequented as a place for sea-bathing. The lower town is the most commercial part; and here are the custom-house, a large theatre, and reading-room. A Phœnician square tower 100 feet high, with walls 4 feet thick, called Torre de Hercules, and said to have been repaired by Trajan, has been long converted into a lighthouse. From *columns*, the Latin name given to this tower, some derive the modern name of the city.

On the ramparts of the city the inhabitants

have erected a monument to General Sir John Moore, who fell before the city Jan. 16, 1809.

(Labrada, *Descripcion del Reyno de Galicia*; Ford's *Hand-book of Spain*.)

CORVIDÆ, an extensive family of the conirostral group of birds, respecting which ornithologists entertain different opinions. Some, for example, include in this group the Roller (*Coracias*); the Mino Birds (*Eulabes*) [ROLLER]; the Piping Crows (*Barita*); the Satin Bird (*Ptilonohrynchus*); and the Myophone (*Myophonus*); regarding them as the annectant links between the more typical *Corvidæ* and other families. By some the Birds of Paradise [BIRD OF PARADISE] are included in the Corvidæ, as well as the genus *Epimachus* of Cuvier, and the *Astrapia* of Vieillot.

Mr. Swainson's views respecting the *Corvidæ* are detailed at large in the 'Fauna Boreali-Americana,' vol. ii. They differ essentially from those of other ornithologists, and have never been adopted. The same observation indeed applies to his whole system. [ANIMAL, vol. i. col. 754.]

The *Corvidæ* are to a great extent omnivorous; they are bold, cunning, and inquisitive, and are easily tamed; some, as the magpie, &c. are proverbial for their imitative faculties and habits of pilfering. The instinct of acquisitiveness is greatly developed. All are acquainted with the thievish propensities of the jackdaw and magpie, and their fondness for glittering objects. The raven, the jackdaw, the magpie, and the jay, easily learn to articulate words, and even to whistle short strains of music.

Under the family-title *Corvidæ* we may notice the following genera, of which some occupy a doubtful position.

Genus *Corvus*.—Bill straight, large, compressed, and a little swollen on the sides; convex and curved towards the point, its edges cutting; nostrils open; fourth quill the longest; tail, even, rounded, or rectilinear.—Geographical distribution, all the four quarters of the globe.

British species:—The Raven (*Corvus corax*), common over Europe, and a great portion of Asia, Africa, and North America. It braves alike the cold of the arctic regions and the heat of the torrid zone. The Carrion Crow (*Corvus corone*), common in western Europe. The Hooded Crow (*Corvus cornix*), migratory in England, appearing in October, and retiring on the approach of spring; stationary in the northern parts of Scotland; common in the mountainous districts of eastern Europe, and in the Alps. The Rook (*Corvus frugilegus*), too well known to need any remark. The Jackdaw (*Corvus monedula*), a noisy tenant of old buildings, towers, steeples, and rocks.

Genus *Pica*.—Bill entire, with cutting edges, straight or curved, furnished at the base with setaceous feathers lying forwards; tail long and graduated.—Example, the Magpie (*Pica caudata*), an inhabitant of Europe, Asia, and North America: its habits are well known.

Genus *Dendrocitta*.—This genus was established by Mr. Gould for the *Pica vagabunda* of Wagler, *Pica Sinensis* of Hardwicke, and a third species *D. leucogastra*. The generic characters of this form differ but little from those of Pica.—Locality of the species, eastern Asia. (Gould, in 'Proceeds. Zool. Soc.,' May 14, 1833, and 'Century of Birds from the Himalaya Mountains.)

Genus *Garrulus*.—Bill moderate, with cutting edges inclined, and with obscure notches near the point; tail even, sometimes rounded.—Example, the Common Jay (*Garrulus glandarius*). This beautiful inhabitant of dense copses is too well known to need description. There are several foreign species, peculiar both to Asia and America. (Gould's 'Century of Birds;' Wilson's 'American Ornithology.')

Genus *Picathartes*.—Bill convex, not very robust, destitute of hairs at its base, but furnished with a cere; nostrils placed on the middle of the bill, oval, open, hollowed into an oblong excavation; head entirely naked; tarsi long, naked behind; claws feeble; wings short and rounded; tail long and graduated.—Example, the Pie Chauve (*Picathartes gymnocephalus*), *Corvus gymnocephalus*, Temminck. Country unknown, but supposed to be Guinea. This bird closely resembles the Piapic (*Corvus Senegalensis* of Le Vaillant). The general colour of the upper parts is ashy brown; tail bistre brown; neck and under parts white. Length, 15 inches. Of the habits of this singular bird nothing is known.

Genus *Podoces*.—Bill moderate, bending at the tip; nostrils basal, rounded, covered with setaceous feathers; feet robust and long; claws triangular; first quill short, the second, third, and fourth the longest.—Example, *Podoces Panderi*. Locality, the country of the Kirguis, beyond Orenburg. Habits analogous to those of the crows; gregarious; flies badly, but walks well. Colour greenish glaucous above; eyebrows white; bill and claws blackish; legs greenish. This is the only recognised species.

Genus *Myophonus*.—The birds of this genus are all oriental. They are characterised by a large strong bill, furnished at the gape with some bristles and feathers turned upwards. The nasal fossæ are suboval and closed by a large membrane; wings rounded and moderate; tarsi long and demi-scutellated; tail rounded. It is very questionable whether this genus belongs to the *Corvidæ*. To us it seems to be a link between the Blackbirds and Starlings or the Meno Birds.

Mr. Gould, who has figured two species in his 'Century,' namely, *M. Horsfieldii* and *M. Temminckii*, observes, that with respect to their habits little can be said with any certainty; but, from their lengthened tarsi and general structure, they apparently depend in a great measure for their subsistence upon worms, insects, and larvæ. The manners of *M. Temminckii*, on the ground, are said to resemble those of our common blackbird. The Yellow-Billed Myophone (*M. flavirostris*) is a native of Java. Its plumage is a deep blue-black, with a splendid metallic lustre; the bill is of a deep rich yellow; the feet are black.

Genus *Corapica*, Lesson (part of *Kitta*, Temminck). The characters of this genus approximate to those of the Jays. The bill is robust, the point is curved, and slightly notched; and the nostrils are furnished with short bristles. One species is the Philippine Crow (*Corapica Sinensis*), a native of

the Philippine Islands: it is about eleven inches in length; the bill is red; the legs reddish; the

Philippine Crow (*Corapica Sincnsis*).

head is crested with loose feathers; general colour above, pale green, clouded with yellowish green; a black band incloses the eye, and runs round the back of the neck; throat of a yellowish green; lesser wing-coverts brown; quill-feathers olive on their external edge; secondaries terminated with greenish white. Another species is the *Kitta thalassina* of Temminck.

Genus *Ptilonorhyncus* (*Kitta*, Temminck).—This genus, which contains the splendid Satin Bird of New South Wales (*Pt. holosericeus*, Kuhl), cannot be placed among the *Corvidæ*. We shall therefore not enter into details. (Cuvier, in note to p. 355, 'Règne Anim.,' vol. i.)

Genus *Nucifraga*.—Bill long, thick, with cutting edges, terminating in a blunt point, furnished with setaceous feathers at the base; upper mandible longer than the lower; nostrils round, open; wings pointed; fourth quill longest.

The Nutcracker (*N. caryocatactes*) is the European example of this genus. It is of rare occurrence in England, but is numerous in Norway, Sweden, and some parts of Germany.

A second species from the Himalaya Mountains (*N. hemispila*) has been figured and described by Mr. Gould ('Century').

Some authors regard this genus as a link between the Corvidæ and woodpeckers. (Selby.)

Genus *Pyrrhocorax*.—Bill moderate, and compressed; subulate, slender, furnished at the base with feathers directed forwards; nostrils basal; ovoid, open, hidden by bristles; feet robust; claws strong and curved; fourth and fifth quills longest.—Example, the Choquard of the French (*P. pyrrhocorax*.) These birds live in troops, like jackdaws, which they resemble in their manners. They inhabit the high mountains of continental Europe, and especially the snowy region of the Alps. Colour of adult brilliant black; bill yellowish; feet bright red.

Genus *Fregilus*.—Bill longer than the head, slender, arched, pointed; nostrils covered with feathers directed forwards. Closely allied to *Pyrrhocorax*.—Example, the Cornish Chough. This species (*F. graculus*) is common on the rocky coasts of Devonshire, Cornwall, and some parts of Wales. It is of a metallic black, with bright orange-red legs and bill. (Selby's 'Ornithology.')

Genus *Paradisea*. [BIRD OF PARADISE.]—We doubt the propriety of placing these birds in the present family.

Genus *Astrapia*.—This genus seems to have only a remote affinity to the *Corvidæ*. It is represented by that magnificent bird of New Guinea, the Pie de Raradis, or Incomparable of the French (*A. gularis*), also termed Merle de Nouvelle Guinée. Cuvier regards it as approximating to the thrush ('Règne Animal,' vol. i. p. 371). This bird is distinguished by a double crest on the head, by a tail graduated, and three times longer than the body, and by an incomparable magnificence of plumage, which emits a blaze of iridescence. The female wants the crest, and her colours are far less brilliant than those of her gorgeous mate. Habits unknown. (Vaillant's 'Oiseaux de Paradis,' pl. 20 and 21.)

CORVO. [AZORES.]

CORVUS, the Crow, sometimes *Hydra et Corvus*, because this constellation, in fact, contains a part of the body of Hydra, on which the bird rests. In Aratus, Hydra, Crater, and Corvus form one constellation. There are mythological stories, apparently not very ancient, in Hyginus.

CORYDA'LIS, a genus of plants belonging to the natural order *Fumariaceæ*. The species are mostly small glaucous herbs, with ternate or pinnated leaves, and fusiform tuberous or fibrous roots. Upwards of forty species of this genus have been described. They are natives of the temperate parts of the earth in the four quarters of the globe, but are not applied to any useful purpose. Some of the species are cultivated in our gardens.

CORYLA'CEÆ, a highly important natural order of plants, consisting of trees or shrubs, chiefly natives of the colder parts of the world, and valuable either for the nuts they bear or the timber they produce. The oak, the beech, the hazel, the hornbeam, and the sweet chestnut all belong to this order, which is also called *Cupuliferæ*. [CARPINUS; CASTANEA; CORYLUS; FAGUS; QUERCUS.]

CO'RYLUS, the genus of plants after which the natural order *Corylaceæ* receives its name. *C. avellana*, the common Hazel-Nut. This plant, which is a native of all the cooler parts of Europe, Northern Asia, and North America, is the parent of the many varieties of nuts and filberts now cultivated for their fruit. [FILBERT.] It is specifically known by its husks being hispid with glands, leafy, broad, much lacerated, and rather spreading at the point; never contracted into a long tube, nor divided into narrow rigid segments; by its roundish, heart-shaped, very rugose, angular, toothed, cuspidate leaves, glandular-hispid

branches, and shrubby habit. *C. rostrata*, the Horned Hazed-Nut is a very distinct species inhabiting the mountains of the Carolinas, where it rarely exceeds three or four feet in height. In gardens it is scarcely larger. *C. colurna*, the Constantinople Nut, is a native of Asia Minor, and known from all the other garden species by its becoming a tree. It seldom produces its nuts in this climate. Besides these there are the *C. lacera* and *C. ferox*, two species found in the Himalaya Mountains.

CORYMB, a form of inflorescence approaching very nearly to the raceme. The *raceme* consists of an axis, upon which all the flowers are disposed upon footstalks of the same length; and hence its figure is more or less cylindrical. A *corymb* consists of an axis, the lowermost flowers on which have very long stalks, and the uppermost very short ones, so that the mass of inflorescence is an inverted cone, as in Candytuft and many other cruciferous plants. The corymb is, in fact, an umbel with a lengthened axis.

From this word is derived the term *corymbose*, which is applied, not only to flowers, but to any kind of branching in which the lowermost parts are very long and the uppermost very short, as is the case in most species of *Aster*.

CORYMBI'FERÆ, one of the primary subdivisions, in the system of Jussieu, of the natural order *Compositæ*.

The properties of this division of Compositæ are characteristic. Bitterness, with an aromatic odour, is common to all the species. Whether the bitterness depends on an alkaloid or not, chemists have not determined. Many of the species possess properties very similar to those possessed by quinine, and are administered in the same diseases as cinchona; among these are species of the genera *Inula*, *Piqueria*, *Mikania*, and *Emilia*. This bitter principle seldom however gives the character to the plant alone, but is combined with some aromatic oil, which gives the plant the properties of both a tonic and a stimulant. Such a combination is found in many of the species of the genera *Anthemis*, *Artemisia*, *Diotis*, *Santolina*, *Chrysanthemum*, *Eupatorium*, *Liatis*, &c. Sometimes the volatile oil is more prominent than the bitter principle; and this is obvious in the species of *Pyrethrum*, *Tanacetum*, *Stenactis*, *Erigeron*, &c. In some of these the volatile oil assumes the characters of turpentine and the oil of juniper, and acts as a diuretic; hence a certain number of these plants have the reputation of stimulating the action of the kidneys. In some the volatile oil assumes an acrid character, as in *Bidens*, and acts as a sialogogue, as in *Pyrethrum* and *Spilanthes*; in *Maruta* it is sufficiently active to produce vomiting. In some a secretion is produced, similar to that which gives the character to *Cichoraceæ*. Some of the species yield a fixed oil. In addition to the acrid oil in *Pyrethrum officinale* there is a butyraceous matter, consisting principally of stearine. The seeds of the species of *Helianthus* yield a fixed oil on expression, and this is probably not confined to the seeds of this genus. These seeds also contain nutritive matter. Another group yield colouring matters. *Anthemis tinctoria*, and the species of *Calendula* and *Bidens* are used for dyeing yellow; the *Tanacetum vulgare*, for dyeing green. The roots of many species contain starch, and in quantities large enough to afford food for man, as in the tubers of *Helianthus tuberosus*. Many of the species also yield the peculiar form of starch known by the name of *Inulin*, named after the *Inulas* in which it was first found. Some of them appropriate potash in the spots where they grow, and a species of *Erigeron* is remarkable for the large quantities of this alkali which it contains. Gum is a secretion found in considerable quantities in some species, as of *Gnaphalium*, *Conyza*, and *Tussilago*, and on this account they have been used in medicine as demulcents. Tannin is not found in any quantity in this tribe of plants, so that they seldom exert an astringent action upon the system; the *Achillea millefolium* seems however to possess this property. Many of the ornaments of the garden belong to the *Corymbiferæ*. The *Dahlia*, *Chrysanthemum*, *Xeranthemum*, *Aster*, *Erigeron*, *Solidago*, *Cereopsis*, and *Tagetes* are amongst the genera that afford the most showy and highly valued flowers in the autumn of the year. Although the properties and uses of these plants in relation to man are important, yet, in proportion to the position they occupy in the vegetable kingdom, they are few. Many orders which yield a much smaller number of species afford much more abundant materials for the use of man.

CORYNE'PHORUS, a genus of British grasses, belonging to the tribe *Avenineæ*. There is but one species, *C. canescens*, which is a native of the sandy coasts of Norfolk, and Suffolk, and Jersey.

CO'RYPHA, a genus of East India palms, with gigantic fan-shaped leaves. One of the species, the Tara or Talliera, *Corypha talliera*, is an elegant stately species inhabiting Bengal. Its trunk is about thirty feet high, and as nearly as possible of equal thickness throughout. The leaves are used by the natives of India to write upon with their steel stiles, and for other purposes. The other, the Tala or Talipot Palm, *Corypha umbraculifera*, is a native of Ceylon, and similar in appearance; but its leaves are not so round as those of the *Talliera*, the divisions in the centre being shorter than those at the sides. The trunk grows sixty or seventy feet high; the leaves are fourteen feet broad and eighteen long, exclusive of the stalk, and they form a head about forty feet in diameter. Fans of enormous size are manufactured from this plant in Ceylon; the pith of its trunk furnishes a sort of flour from which bread is made; the leaves make excellent thatch, and are also used for writing on, like those of the Talliera.

CORYPHÆNA (Linnæus), a genus of fishes of the section *Acanthopterygii* and family *Scombridæ*.

The genus *Coryphæna* is subdivided by modern naturalists into several genera, or rather is regarded as a family including the following, viz. *Coryphæna* proper, *Caranxomorus*, *Centrolophus*, *Astrodermus*, and *Pteraclis*. All agree in certain characters:—Body elongate, compressed, and covered with small scales. The dorsal fin extends the whole length of the back. The anal fin is long, in some extending from the tail almost to the

pectoral fin: the latter is usually arched and pointed. Tail more or less forked. Branchiostegous rays, generally seven in number.—Examples, *Coryphæna hippuris*, common in the Mediterranean, *Caranxomorus pelagicus*, *Centrolophus niger* [CENTROLOPHUS], *Astrodermus coryphænoïdes*, and *Pteraclis ocellatus*. All except the last are from the Mediterranean. The *Pteraclis ocellatus* (*Coryphæna velifera*, Pallas), so remarkable for the extreme amplitude of the dorsal and anal fins, is said by Bosc to be a native of the seas of the Carolinas. Pallas states that his specimen came from the Moluccas. Perhaps the species are distinct. (Cuvier, *Règne Animal*, vol. ii. p. 215, et seq.)

CORYSTES, a genus of brachyurous or short-tailed Crustaceans. General figure of the carapace, ovoïd; the lateral antennæ very long and setaceous, with two rows of cilia. Eyes distant and borne on large peduncles. Third joint of the jaw-feet longer than the second, and notched on the internal border. Chelæ large, equal, cylindrical or nearly nearly so in the male, and twice as long as the body; in the female, as long as the body and compressed. Abdominal articulations five in the male, seven in the female.—Example, *Corystes Cassivelaunus* (*Cancer personatus*, Herbst), a native of the coasts of England and France. (Cuvier, *Règne Animal*, vol. iv. p. 53.)

COS, an island in the Grecian Archipelago, the modern name of which is Stanco. It lies in the mouth of the Gulf of Céramus. Its principal city, which was immediately opposite to Halicarnassus, was destroyed by an earthquake in the Peloponnesian War. (Thucyd., viii. 41.) The city was not large, but well built and picturesquely situated.

Cos formed a league with Halicarnassus, Cnidos, and the Rhodian Tripolis; and the confederacy celebrated the religious rites on the promontory of Triopium, near Cnidos. (Herod., i. 144.) The wines of Cos were famous throughout Greece. The climate is said to be delightful.

(Leake's *Morea*, ii. 429.)

COSCINO'PORA, a genus of fossil corals, proposed by Goldfuss. *C. infundibuliformis* occurs in the chalk of Ireland.

COSECANT, COSINE, &c. [TRIGONOMETRY.]

CÖSLIN. [POMERANIA.]

COSMAS INDICOPLEUSTES. This is the name given to the author of a Greek work, who lived in the 6th century of our æra, under the Emperor Justinus. The work as it exists in the MSS. is entitled 'Christian Description of the Whole World.' It has been conjectured that the name Cosmas Indicopleustes, or Indopleustes, has been given to the unknown author, from the title of his work, 'Cosmus,' and the fact of his having travelled to India. He had seen India and Ceylon, and it has been conjectured that he was a merchant.

The object of Cosmas was to reconcile the natural phenomena of the universe with the account in the Bible. He says that the habitable earth is flat and rectangular, the length being twice the breadth, and that it is surrounded by the ocean, which flows into the earth by four passages, the Mediterranean Sea, the Caspian, the Arabian Gulf, and the Persian Gulf. The opinion that the Caspian communicated with the ocean was firmly established before the time of Cosmas, though Herodotus, 450 years before the Christian æra, had declared that the Caspian was a lake. The rest of his cosmography is of a piece with this.

In the second book the author speaks of the monument of Adúle, which he had seen, and which he has transcribed into his work. In the eleventh book he gives a description of Taprobane, or Ceylon, and the animals of India. The Christian Topography is printed in B. Montfaucon's 'Collectio Nova Patrum,' Paris, 1707, fol. The description of Ceylon and of the products of India was edited by M. Thevenot, with a French translation, in the first volume of the 'Relations des divers Voyages Curieux,' Paris, 1666, fol.

(Fabricius, *Biblioth. Graeca*, iv. p. 251, edit. Harles.)

COSMO, the Elder. [MEDICI FAMILY.]

COSMO I., Duke of Florence, and afterwards Grand Duke of Tuscany, was the son of Giovanni de' Medici, a celebrated condottiere of the 15th century, descended from a collateral branch of the first house of Medici. The elder branch became extinct by the death, in 1519, of Lorenzo de' Medici, duke of Urbino, the only legitimate grandson of Lorenzo the Magnificent, which was followed soon after by the death of his uncle, Pope Leo X. The Duke of Urbino left an illegitimate son, Alessandro, who was made duke of Florence after the surrender of that city to the allied arms of Charles V. and of Pope Clement VII., in 1530, and who was murdered by his relative Lorenzino, in 1537. The friends and councillors of the late duke, with Guicciardini, the historian, at their head, proposed to appoint young Cosmo, of the younger branch of the Medici, as successor to Alessandro. Cosmo had against him a number of emigrants and some of the first families of Florence, but he was supported by the Emperor Charles V., and the victory over the emigrants at Montemurlo made Cosmo absolute lord of Florence. His rule was harsh and despotic at home, and abroad he employed spies, assassination, and poison against his enemies. He effected a striking change in the manners of the Florentine people who were before noted for their garrulity and lightness of conversation; they became henceforth taciturn and cautious, and spoke in half sentences. In other respects the administration of Cosmo was orderly and wise; he was attentive to business, and looked himself into all public affairs. He was the first to establish the unity and independence of Tuscany as a political state. His finances were in good condition, and his treasury always well supplied with money.

Cosmo possessed at first the territories of the two republics of Florence and Pisa. In 1552 he added to his dominions, by an agreement with Jacopo d' Appiano, lord of Piombino, that principality, and also the island of Elba, when he fortified Porto Ferrajo, and improved its harbour. But a more important acquisition was that of Siena. Siena had been under the protection of Charles V.; but in 1552 the citizens drove out the Spanish

garrison, and joined the French. After hostilities had continued for some time, Siena was besieged, and starved into a surrender to Cosmo in April 1555. The conditions were not harsh. Siena retained her municipal institutions under the protection of the emperor, who was to keep a garrison in it; but in the meantime Cosmo placed a garrison in it himself. All those citizens who chose to emigrate were at liberty to do so. Of 40,000 inhabitants which Siena had previous to the siege, only 6000 remained: the rest had either died or emigrated. In July 1557, Cosmo received from Philip II., who had succeeded Charles V., the formal possession of Siena and its territory, exclusive of some ports and territory on the coast, which were afterwards annexed to the crown of Naples under the name of 'Stato de' Presidj.' The Siennese swore allegiance to Cosmo, who left to them their municipal laws and magistrates. All Tuscany was thus for the first time since the fall of the Roman empire united under one government.

In 1569 Pope Pius V., by a solemn bull dated 28th August, conferred upon Cosmo and his successors the title of grand duke of Tuscany.

Cosmo spent the latter years of his life chiefly at one or other of his villas, having intrusted the cares of administration to his son Francesco in 1564. Many things are said of the irregularity of his life in his old age, and his sons Francesco and Pietro were worse than their father in this particular. Cosmo died 21st April, 1574, in the palace Pitti, which had become the residence of the grand dukes, and was succeeded by his son Francesco.

Cosmo, though an unprincipled man, was a very able statesman. In the general breaking up of most of the Italian independent states in the 16th century, he found means to create and consolidate a principality, which has remained ever since independent. He had the firmness to refuse Philip II.'s first offer of Siena as a fief of the Spanish crown, answering, that he was an independent sovereign, and would not make himself the vassel of another. Cosmo encouraged the arts and literature. He founded the Florentine Academy, the Academy del Disegno, or of the fine arts; and he restored the University of Pisa. The Medici dynasty founded by Cosmo became extinct in 1737 by the death of the Grand Duke Gian Gastone. He was succeeded in his sovereignty by Francis, duke of Lorraine, the husband of Maria Theresa of Austria.

(Botta, *Storia d' Italia;* Galluzzi, *Storia del Gran Ducato di Toscana;* Ammirato, *Istorie Florentine,* &c.)

COSMO'GONY is defined to be the science of the creation of the world, as if there could be a science of what is unknown, and cannot be known. What has been written and said on the subject is not worth reading. So far as we can trace the physical history of the world in its phenomena, it is an interesting study, which has many practical and useful results, as the science called geology has proved. Yet even geology has not always been kept free from speculations and conjectures which are beyond the limits of true science.

COSMOGRAPHY, the description of the system of the world, from two Greek words, which signify the world, or the universe, considered as a system of order. Cosmography, strictly limited, has nothing to do either with the origin and creation of things, which is the subject of cosmogony, nor with the metaphysical philosophy of the constitution of things, which is cosmology. It is merely the description of the system of the material world, as it is, or as it appears to our senses.

COSNE. [NIE'VRE.]

COSSACKS, a people inhabiting those parts of the Russian empire which border on the northern dominions of Turkey, Poland, and Tartary, as well as the southern parts of Siberia. Both the name and origin of this singular people are involved in uncertainty. The first mention made of them is about the time of the downfal of the Tartar dominion in Russia. As a united people they seem to have sprung up in Southern Russia out of the remains of that dominion. There, amalgamating with the natives and fugitives from all parts, they gradually extended their power to the Bug and Dniester, building towns and villages, and waging war against the Turks and Tartars. They fortified themselves in their head-quarters on an island of the Dnieper called Korlitzkoi-Ostrof, from three streams on the right bank of the river. They gave this settlement the name of Setch, or Setcha, while they themselves, from their local position, bore that of Zaporoghes. They had not then assumed the name of Cossacks, nor were they known by it in history until 1516, when they began to act a conspicuous part in the Polish affairs.

In 1575 Yermac, or Yermolai-Timofief, exasperated by Muscovite oppressors, who had subjugated the Cossacks of the Don in 1549, deserted his quarters on that river, directed his flight along the Volga, destroyed the Khannate of Kutchum, and then established his followers in the south of Siberia: hence arose the nation of the Siberian Cossacks. The Cossacks of the Don in 1592 accepted the protection of Poland, and not till 1654 did they return to their former connection with Russia. In 1708 they joined Charles XII. of Sweden, but soon became again subject to Peter the Great, who disbanded and remodelled their 'pulks,' or regiments. They then repaired to the khan of Crimea, but were allowed to settle again on the Russian territory by the Empress Anne. Here they remained until they provoked the Empress Catherine by their turbulences, who ordered their Setcha to be destroyed, the inhabitants to be scattered, and the Cossacks of the Ukraine to be formed into regiments of hussars. The Zaporoghes were banished to the peninsula of Taman, and from these exiles sprang the present Cossacks of the Euxine. In later times the Cossacks have been allowed the tranquil enjoyment of their settlements, and have been exempted from taxation on condition of furnishing certain contingents to their Russian masters. In 1831 the Emperor Nicholas re-established the 'pulks,' or regiments of the Ukraine under the denomination of the Cossacks of Little Russia. At present their troops are wholly composed of cavalry, and amount to about 100,000.

Every Cossack between the ages of 18 and 40 is liable to perform military duty. Each regiment is drawn from one or more stanitzas, or districts, and every Cossack is required to supply himself with a horse, arms, and equipments. The young are called out first, and men of advanced age are retained as the reserve, unless they volunteer for field duty. The recruits are more favoured than any others in the Russian service. In time of war the period of service is unlimited; in time of peace it is confined to three years. The Cossacks of the Euxine, who are attached to the corps stationed in the regions of the Caucasus and Georgia, are almost invariably in active service. The nominal dignity of Attaman is vested in the heir-apparent to the Russian crown. The Cossack receives no pay but when in the field or on the Russian frontier. The dress of the soldiery is a short vest in the Polish style, large trowsers of deep blue, and a black sheepskin cap. Their arms consist of a long spear, sabre, musket, pair of pistols, and a whip with a leather thong, called a natraika, which they apply to their enemies' as well as their chargers' back. They are mostly members of the Russo-Greek Church, enjoy their own independent constitution, and are a purely military people. The only authority that we possess as to their actual members is a return of the year 1749, when the number of hearths was 118,459, and of male persons 955,228. In the beginning of the present century Archenholtz affirmed the number of males fit for duty to be 700,000. The Cossacks are proverbially hospitable and cheerful, but violent when excited; and, although they consider the plunder of their enemy lawful in war, theft is almost unknown among them. Their mode of life is in general very simple and frugal, and the enjoyment of civil freedom has given them an independence of mind which places them far higher in the social scale than the abject Russian. Their starchines, or nobles, are in general well educated.

COSSEIR, a seaport town of Egypt on the Red Sea, in 26° 7′ N. lat., and 34° 21′ E. long. The caravans which trade with Arabia proceed from Kenneh on the Nile to Cosseir, through the sandy desert east of the Nile; the track, about two-thirds of the way from Kenneh, crosses a rocky ridge, on the east side of which a valley opens, leading to the coast of the Red Sea where Cosseir is situated. Several springs or wells are found on this track. From Cosseir, which has only an open roadstead, vessels cross over to Jidda, the port of Mecca, or to Yambo, the port of Medina. The town is a poor place, with a population of only about 1000; but there are large storehouses where the caravans deposit their goods.

COSSONUS (Clairville), a genus of coleopterous insects of the family *Curculionidæ*, of which about seventeen species are known. Schoenheer selects *Cossonus linearis* as the type. This insect is not uncommon in England, and has been found in boleti and old trees. Length about a quarter of an inch: colour, black or brown. (Cuv. *Règne Anim.*, vol. v. p. 89.)

COSSUS (Fabricius), a genus of Moths, of the section *Lepidoptera nocturna*, and the family *Hepialidæ*. The larva is lignivorous, the pupa inclosed in a cocoon.

The Goat-Moth, or *Cossus ligniperda*, is one of the largest of the British moths, measuring from tip to tip of the wings when expanded from 3 inches to 3¾. The larva when full grown is about 3 inches in length. It resides in and feeds upon the wood of the oak, poplar, and aspen; but old pollard willows appear to be its favourite haunts, and may be frequently seen perforated by the large burrows it works out with its strong jaws. It is three years before attaining to maturity, at which time it incloses itself in a tough cocoon, formed of particles of wood joined together by a glutinous web. This caterpillar emits a very disagreeable odour, and the scent remains long on the hand which has touched it. A detailed history of the *Cossus ligniperda* will be found in the 'Mémoires pour servir à l'Histoire des Insectes,' by De Geer; and for its anatomy we refer to the 'Recherches sur l'Anatomie et les Métamorphoses de differentes Espèces d'Insectes,' by L. L. Lyonet.

COSSYPHUS (Olivier), a genus of coleopterous insects, of the section *Heteromera*, and subsection *Taxicornes*. About 10 species are known. They are natives of the south of Europe and the northern parts of Africa and India.

The present genus with two others (*Helæus* and *Nilio*) form, according to Latreille, the second tribe of the family *Taxicornes*, and are included under the head Cossyphenes.

(Cuvier, *Règne Anim.*, vol. v. p. 32.)

COSTA-RICA. [CENTRAL AMERICA.]

COSTARD, GEORGE, born about 1710, became M.A. of Wadham College, Oxford (of which he afterwards was a fellow), in 1733, and rector of Twickenham in 1764, at which place he died, January 10, 1782. He was the editor of the second edition of Hyde's works on the 'History of the Persians;' but his claim to notice is principally derived from his 'History of Astronomy,' &c. London, 1757. In all matters of ancient and oriental learning, Costard frequently cites the passage and always the reference, which gives his work a lasting value.

COSTER, LAWRENCE, or LAURENT JANSZOON, a native of Haarlem in Holland, whom the Dutch consider as the true inventor of the art of printing. He is believed to have been born at Haarlem about the year 1370, and in after-life filled successively several minor offices in his native town, as sacristan, churchwarden, and treasurer of the church of St. Bavon. His name appears in the registers of that church in the years 1423, 1426, 1432, and 1433. The time of his death is not mentioned.

It is mainly upon the testimony of Hadrian Junius, who gave an account of the discovery of printing by Coster in his 'Batavia,' published in 1588, that the writers of Holland found what they consider the undoubted pretensions of Haarlem to the invention of printing. Junius is the earliest writer at present known who makes express mention of Lawrence Coster as the inventor of typography; but he certainly was not the first who asserted that the art was invented at Haarlem. Other writers, among whom are Scriverius

(on the authority of John van Zuyren), T. V. Coornhert, and Guicciardini, ascribe the invention to Haarlem. All these writers however appear to have founded their statements upon the very same tradition as that related by Junius, with the omission only of Coster's name. The reader who would enter more fully into it must consult Meerman's 'Origines Typographicæ,' and Ottley's 'Inquiry into the Origin and Early History of Engraving upon Copper and in Wood.' These authors support the cause of Haarlem. Baron Heineken, in his 'Idée Générale d'une Collection Complette d'Estampes,' and Lambinet, in his 'Origine de l'Imprimerie,' are the chief writers on the other side.

COSTROMA, or *Kostroma*, a province in the eastern part of Russia in Europe, situated between 57° and 59° N. lat., 40° and 48° E. long., has an area of 31,814 square miles, and a population of 1,054,600. The surface is in general level, and the soil productive. The Volga enters the province from that of Yaroslav, and flowing past the town of Kostroma, where it receives the Kostroma River on the left bank, it runs E. to the point where it is joined by the Ounja, also on the left bank; hence its course is due S. into the province of Nijnei-Novgorod. The eastern part of the province is drained by the Vetlouga, which joins the Volga on the eastern border of Nijnei-Novgorod. There are several lakes and swamps in the north of the province. The inhabitants are active agriculturists: they grow rye, wheat, hemp, and flax. The province contains a great deal of forest land, which is principally crown property. Little attention is paid to the breeding of cattle, but the fisheries are carried on vigorously, and produce nearly 800 tons a year of salmon, sturgeon, &c. Tar, pitch, and charcoal are produced in large quantities; the other industrial articles are linen, leather, soap, Prussian blue, brandy, and mats. The principal towns, besides Costroma, the capital, are—Galitsch (about 7000 inhabitants); Makurief, the town next in importance to Costroma for its trade (8000); Yurgowetz-Powolskoi at the junction of the Ounja with the Volga (2600); Sol-Galizkaya (3500); and Kinishna (2500).

COSTROMA, the capital of the province of Costroma, is situated at the confluence of the Volga and the Costroma, in 57° 45′ N. lat., 41° 12′ E. long., about 217 miles N.E. from Moscow, and has 10,000 inhabitants. The upper part of the town covers a height, on the summit of which stands the cathedral. In this quarter are the government buildings, and the flower and fruit market, which is held under a roof covered with canvas. Below the upper town, on the slope of the hill, is another quarter, built entirely of stone; and along the high banks of the Volga runs a third quarter, consisting of a long line of neat houses, of wood and stone. There is a Tartar suburb and mosque outside the walls. Costroma is an affluent and thriving town; it has 8 asylums for the indigent, an ecclesiastical seminary, a high school and a district school. The inhabitants are employed partly in trade and partly in the manufacture of linens, Berlin blue, sealing-wax, soap, leather, bells, &c.

COSTS, in the technical sense of the word, are the expenses incurred by parties in proceedings at law or in equity. In civil actions, and in suits in equity, particular importance attaches to the principles and practice of costs, since, though in themselves incidental and subordinate to the main cause of action or suit, it often happens that they become a chief object of contention. The rules as to costs in courts of common law and courts of equity can only be learned from books of practice.

COSWAY, RICHARD, R.A., was born in 1740, at Tiverton in Devonshire, where his family had been long settled, and his father was master of the public school. Cosway was placed with Hudson, and at Shipley's drawing-school in the Strand, London. He was very diligent: he obtained in a few years, between the fourteenth and twenty-fourth years of his age, five premiums from the Society of Arts. His chief excellence was in miniature painting, in which he had very great ability, and was professionally successful to the utmost degree. He was elected a member of the Royal Academy in 1771, and painted several fancy portraits for its exhibitions. He exhibited 'Rinaldo and Armida,' 'Cupid,' 'St. John,' 'Venus and Cupid,' 'Madonna and Child,' and 'Psyche,' all of which were portraits of some of his titled patrons, good likenesses, and successful works.

About this time he was married to Maria Hadfield, who, though of English parentage, was a native of Leghorn, where her father had kept an hotel, which was much frequented by English travellers. After her marriage with Cosway she became a very distinguished exhibitor at the Royal Academy, and her musical parties, in which she was chief performer, were among the chief attractions of the age. The house in which these parties were held was furnished in the most costly and gorgeous style. Cosway was very industrious, and his wife also painted many portraits and other works of a poetic and imaginative nature, but Cosway would not allow her to paint portraits professionally. There are several prints after her works by Bartolozzi, V. Green, and others.

Cosway died in 1821, aged eighty, and his widow retired to Lodi, established a ladies' college there, and became widely known and respected.

(Smith, *Nollekens and his Times;* Cunningham, *Lives of the most Eminent British Painters.*)

CÔTE-D'OR, a department in France formed out of the eastern part of the old province of Bourgogne and a small portion of Champagne, is bounded N. by the department of Aube, N.E. and E. by those of Haute-Marne and Haute-Saône, S.E. and S. by those of Jura and Saône-et-Loire, and W. by those of Nièvre and Yonne. It extends from 46° 55′ to 48° 3′ N. lat., and from 4° 2′ to 5° 29′ E. long.; its length from N. to S. is 77 miles, from E. to W. 68. The area is 3306.8 square miles, and the population in 1841 was 393,316, which gives 118.94 to the square mile, being 49.06 below the average per square mile for all France.

The department is crossed by a chain of hills which forms the connecting link between the Cévennes and the Vosges Mountains, and separates the basin of the Seine from that of the

Saône. Leaving the Cévennes at the sources of the river Dheune, which forms part of the southern boundary, the chain runs N.E. to within a short distance of Dijon, where it is crossed by the road from Paris to Geneva; from this point it tends to N.N.E., and joins the plateau of Langres (on the borders of Haute-Marne), which is connected at its north-eastern extremity with the Faucilles Mountains, an offshoot of the Vosges. That portion of the chain which extends from the neighbourhood of Dijon to the Dheune is properly called Côte-d'Or or 'Golden Slope,' in allusion to the richness, delicacy, and value of the wines produced on its eastern and southern declivities; but the name has been extended to the whole range, and hence to the department itself. From the mountain-knot formed by the junction of the Cévennes range with that of the Côte-d'Or, a chain runs N.W. under the name of the Morvan Hills, which forms the watershed between the Seine and the Loire.

On the north-western slope of these mountains are the transverse valleys of the Aube, the Ource, and the Seine, separated from each other by wooded hills. Farther south is the valley of the river Armançon, which, rising in the mountain-knot before mentioned, flows N.W. to the Yonne, a feeder of the Seine; while from the same knot the Arroux flows S.S.W. to join the Loire; and the Ouche N.E. to Dijon, and thence E. by S. on its way to the Saône. The eastern slope stretches towards the Saône, which flows through a longitudinal valley of great extent and fertility, and is navigable. At a little distance from the crest of the main chain the slope breaks up into ranges of calcareous hills, the declivities of which however sink down into the valley before reaching the Saône. Several rivers of short course and small volume enter the Saône from the right bank.

The Canal-de-Bourgogne, or Canal-de-l'Est as it is also called, has the greater part of its length in this department. It leaves the Saône at St.-Jean-de-Losne and is carried by a tunnel two miles long through the mountains south-west of Dijon; from this point it runs first south-west along the right bank of the Ouche, then turning north-west it reaches its summit level at Pouilly, beyond which it runs along the Armançon to its junction with the Yonne in the department of Yonne. The Canal-du-Rhône-au-Rhin commences in this department, also in the Saône, a little above St.-Jean-de-Losne. By means of these canals, the Saône and the Canal-du-Centre, which leaves the Saône at Châlon, the department has water communication with the Mediterranean, the German Ocean, the English Channel, and the Bay of Biscay. The department is also traversed by 9 royal and 15 departmental roads; and the railroad now in course of construction from Paris to Lyon has a considerable part of its length in this department, passing through Sémur, Dijon, and Beaune.

The valleys and plains of the department are fertile, especially in the east and south, and they present a great variety of culture. The fields are very generally inclosed by hedges. Wheat, maize, rye, barley, and oats are raised in large quantities, so as to afford a considerable surplus for exportation. Hemp, flax, oleaginous plants, fruits, mustard, and all kinds of kitchen vegetables, are extensively cultivated. The ground is tilled in the plains by the plough, in which oxen and horses are used; but on the hills spade-culture is the system universally prevalent. A large portion of the department is laid out in grass-land, especially in the basin of the Saône, and great numbers of sheep as well as cattle are reared. Asses are used in farm labour. Pigs are very numerous. Bees are carefully tended, and a good deal of honey is made. Game and fish are plentiful. But the most important source of wealth to the department is its vineyards, especially those of the Côte-d'Or, properly so called. This favoured district is divided into two parts—the Côte-de-Nuits, extending from Dijon to Nuits; and the Côte-Beaunoise, from Nuits to the Dheune. The former is famous for its red wines, the most renowned of which are those called Romanée, Vougeot, Chambertin, Richebourg, and Nuits; while the latter produces both red and white wines, which for flavour, delicacy, and perfume, are not surpassed in the world; but they do not bear transport so well as those grown on the Nuitonne slope. Among the red wines of the Beaune slope, the most famous are those called Volnay, Pomard, Beaune, La Peyrieure; and among the white, Meursault, Montrachet, and Goutte-d'Or. Besides these famous Burgundy wines, a good deal of wine resembling Champagne is manufactured in the department, and sold as such. The annual produce of all the vineyards of the department amounts to 11,836,000 gallons.

The department ranks the first in France with respect to the extent of its forests, in which oak, beech, and elm are the principal trees. The chestnut does not flourish. The extent of forest-land however is greatly diminished within the last 50 years, and it is said that the climate, which is bracing, pure, and healthy, is becoming gradually colder in consequence of the stripping the mountains of trees. The whole area amounts to 2,116,381 acres, distributed among 161,326 proprietors, and subdivided into 2,232,740 parcels. Of this surface 1,129,530 acres are capable of cultivation, 155,608 are meadow and grass-land, 65,166 are under vineyards, 616,864 are covered with woods and forests, and 14,848 with orchards, nurseries, and gardens.

Iron, coal, marble, millstones, limestone, plaster of Paris, potter's clay, &c. are found. The iron mines, which lie chiefly in the mountains in the north-east of the department, are amongst the most productive in France; the ore is converted into malleable iron and steel at 88 blast furnaces and foundries by means of charcoal near the mine-mouth. There are 292 factories of various kinds in the department, the products being linen, woollen cloth, blankets, cotton and woollen yarn, beet-root sugar, brandy, vinegar, paper, seed oil, beer, leather, and earthenware. The commerce of the department consists in the agricultural and industrial products already named, and in wool, hides, timber, oak staves, hay, fuel-wood, nails, and whetstones. About 400 fairs are held annually.

The department is divided into 4 arrondissements, which, with their subdivisions and population, are as follows:—

Arronds.	Cantons.	Communes.	Pop. in 1841.
Dijon . . .	14		144,549
Beaune . . .	10	202	123,446
Châtillon-sur-Seine . .	6		54,181
Sémur . . .	6	146	71,140
Total . .	36	733	393,316

In the arrondissement of Dijon the chief towns are—DIJON, the capital of the department, and AUXONNE. Fontain-Française, which has blast-furnaces, breweries, and potteries, and near which Henri IV. defeated the Duke of Mayenne, in 1595; Is-sur-Tille, on the Ignon, which has iron works and a worsted factory; St.-Seine-l'Abbaye, which owes its origin to the abbey founded here by St.-Seine in 536, and has one of the finest churches in the department; and Selongey on the Venette, a feeder of the Saône, are small places which give name to some of the other cantons.

In the arrondissement of Beaune the chief town is BEAUNE. The other towns are—Arnay-le-Duc, near the left bank of the Arroux, which is a place of some manufacturing industry, with a college and 2511 inhabitants: Nuits, a pretty little town 9 miles north-east of Beaune, which has 3175 inhabitants, who manufacture cloth, leather, and paper, but are chiefly engaged in the culture of the vine: Seurre, in a plain of great fertility on the left bank of the Saône, which has a college, oil and flour mills worked by steam, tanneries, a shawl manufactory, boat-building yards, and 3612 inhabitants, who trade with Alsace and Switzerland in corn, charcoal, wine, hay, &c.: and St.-Jean-de-Losne, on the right bank of the Saône, which trades in similar produce, and has a tribunal of commerce and 2134 inhabitants. Meursault, a few miles south of Beaune; Nolay, the birth-place of Carnot; Pouilly, near the source of the Armançon, are small places with populations little exceeding 2000.

In the arrondissement of Châtillon-sur-Seine the chief town is Châtillon-sur-Seine, which stands on the Seine, in a hilly country, and has tribunals of first instance and of commerce, a college, and 4779 inhabitants. The town-hall, which is surrounded with public gardens; the court-house, established in the old Carmelite convent; the church of St.-Nicholas, which dates from the 12th century; the church of St.-Vorlé; and the castle of Chaumont, which is surrounded by a fine park traversed by the Seine, are the most remarkable buildings. The town has a library of 7000 volumes; blast furnaces and iron foundries; paper mills; tanyards; breweries; corn, fulling, and bark mills, and brandy distilleries; it is a place of active commerce, being the centre of a very important iron district. Aignay-le-Duc; Laignes, at the source of the Laigne, a feeder of the Seine; and Recey, on the Ource, are small places which give name to the other cantons, and, like most of the villages in this arrondissement, have iron foundries and blast furnaces.

In the arrondissement of Sémur, the chief town is Sémur-en-Auxois, which is built on a granite rock on the left bank of the Armançon, 35 miles west from Dijon, and has 4355 inhabitants. The town, which is well built, is divided into three quarters: the Bourg, the Donjon, and the Château, and has four squares and three handsome promenades. The church, built in 1065 by Robert I., duke of Bourgogne, is the most remarkable building; it contains many antiquities, and has been classed among the historical monuments of France. The town has a college; a library of 15,000 volumes; a small theatre; and manufactures of cloth, serge, woollen and cotton yarn; besides tanyards, bark and fulling mills, &c. In the environs, which are very pretty, the Armançon forms several cascades. Montbard, the birthplace of Buffon, at the junction of the Canal-de-Bourgogne and the Brenne, a feeder of the Armançon, is a place of some trade, and has 2215 inhabitants. Saulieu, the birthplace of Vauban, 17 miles S. from Sémur, is a walled town with a tribunal of commerce, a college, and 2922 inhabitants, who trade in corn, hemp, wool, timber, fuel-wood, charcoal, oak staves, &c. Flavigny, east of Sémur; Vitteaux, a pretty little town on the Brenne; and Précy-sous-Thil, on the Serein, a feeder of the Yonne, give names to the other cantons, and have each a population under 2000.

The department forms the see of the bishop of Dijon, is under the jurisdiction of the Cour Royale and University Academy of Dijon, and is comprised in the 18th Military Division, of which Dijon is the head-quarters. It returned 5 members to the Chamber of Deputies under the late Monarchy; it now returns 10 members to the National Assembly convoked by the Republic.

(*Dictionnaire de la France; Statistique de la France; Annuaire pour l'An* 1847; *Decree of the Provisional Government of the French Republic.*)

COTENTIN. [MANCHE, LA.]

A

COTES-DU-NORD, a department in the north of France, formed out of Haute-Bretagne and a small part of Basse-Bretagne, is bounded N. by the English Channel, E. by the department of Ille-et-Vilaine, S. by that of Morbihan, and W. by that of Finistère. It extends from 48° 2′ to 48° 53′ N. lat., and from 1° 58′ to 3° 35′ W. long.; its greatest length from E. to W. is 76 miles; its breadth from N. to S. varies from 25 to 50 miles. The area is 2595 square miles, and the population, in 1841, was 607,572, which gives 234.13 to the square mile, or 66.12 above the average per square mile for all France.

The coast-line of the department, reckoning all its windings, has a length of 152 miles, and presents to the sea a bold wall of granite rocks, which are indented with numerous bays and harbours, and form several bold headlands. A great number of small islands are scattered along the coast. A district called *La Cincture Dorée*, or the Golden Belt, which extends along the coast, and about 8 or 10 miles inland, is of great fertility,

producing large quantities of wheat, barley, hemp, flax, clover, and all kinds of table vegetables. Sea-weed, which is found in great abundance on the sands at the foot of the rocks on the seashore, is commonly used for manure in this district.

The Armoric Hills, which cross the middle of the department from E. to W., have a breadth from N. to S. of about 16 miles, and in their culminating point, Mount Menez, reach a height of about 1200 feet. These hills are in general barren and stony; they are broken by narrow gorges here and there, and send forth numerous spurs to the north and south, which sink gradually down into two hungry sandy plains, the northern one of which extends to the southern border of the Golden Belt. In the interior of the department, where the farmers have neither sea-weed nor lime to manure their land, agriculture is in a very backward state, and the people are steeped in poverty and misery, which are increased by the decay of the linen trade. Here rye and oats are grown; draught horses, horned cattle of inferior breed, and goats are reared; a good many sheep are kept, but, as they are chiefly pastured on heath-land, they are small, wretched, and feeble in the extreme. The cider-apple-tree is extensively cultivated throughout the department, to the neglect of all other trees. Among the Armoric Hills there are some good forests; but in general the range presents large tracts overgrown with broom, gorse, holly, evergreens, and other unproductive shrubs.

Among the wild animals of the department are wolves, foxes, badgers, roebucks, and wild boars; hares and rabbits are numerous; along the coast, and in the adjacent islands, the number of land and sea birds is prodigious. The deep-sea fishery affords employment to a great number of hands, and several vessels are engaged in the Newfoundland fisheries, so that the department furnishes a large number of experienced seamen to the French navy.

Iron mines are worked, and a good deal of pig and bar iron is manufactured. Lead also is found; slates and granite are quarried. In the iron furnaces the ore is smelted and converted into malleable iron generally by means of charcoal; where coal is used, it is imported from England or Belgium. Salt is made at several places on the coast.

The linen manufacture, introduced in the 15th century by the Baroness de Quintin, a Flemish lady, has since continued the staple trade of the department, and, though it has declined of late years, it is still considerable. Its former importance may be estimated from the returns for the year 1836, when the number of weavers employed amounted to 8539, who produced, in that year, 8,358,000 yards of linen cloth, representing a money value of 11,144,000 francs. Linen forms the clothing of the poorer classes of the population both winter and summer; and it is largely exported to Spain and South America. Other articles of export are cattle, horses, tallow, salt butter, honey, wax, &c. About 425 fairs are held in the year. The number of wind and water mills amounts to 1822, of iron furnaces to 20, and of factories of various kinds to 460. Druidical remains and old feudal castles are numerous in this department and in all parts of Bretagne.

The principal river is the Rance, which, rising in the south-east of the Armoric Hills, sweeps round to north-east through a gap in the range, and passing St.-Jouan-de-l'Isle, Evran, and Dinan (where it begins to be navigable), enters the sea at St.-Malo. By means of the Rance, the Vilaine, and the Canal-de-l'Ille-et-Rance, which, running from Dinan to near Rennes, unites these rivers, the inland communication between the English Channel and the Bay of Biscay is completed. The Aven and the Blavet, which flow through the department of Morbihan, and the Meu, a feeder of the Vilaine, rise in the southern slopes of the same range. The rivers that flow into the English Channel are famous for lovely scenery; they are short and unimportant, except that at their mouths they generally form commodious harbours for small craft, and are navigable at high water a few miles inland. The chief of them, besides the Rance, are the Guer, the Trieux, the Leff, the Gouet, the Evron, the Guessan, and the Arguenon. The department is traversed by 7 royal and 14 departmental roads.

The surface of the department measures 1,660,845 acres, of which 1,016,576 are more or less capable of cultivation, 134,716 are natural pasture-land, 320,846 are heath and moorland, 13,770 are under orchards, nurseries, and gardens, and 100,177 are under woods and forests. The number of proprietors is 158,114, and that of the subdivisions is 1,680,238.

The department is divided into 5 arrondissements, which, with their population and subdivisions, are as follows:—

Arronds.	Cantons.	Communes.	Pop. in 1841.
St.-Brieuc . .	11	97	174,132
Dinan . . .	10	91	111,876
Loudéac . .	9	55	92,124
Lannion . .	7	63	108,749
Guingamp . .	10	73	120,691
Total . .	47	379	607,572

In the arrondissement of St.-Brieuc, the chief town, St.-Brieuc, stands 2 miles from the mouth of the Gouet (where it has a tide-harbour, called Legué for vessels of 400 tons), 283 miles W. from Paris, in 48° 31′ N. lat., 2° 44′ W. long., and has 12,484 inhabitants. It is an old ill-built town surrounded by promenades, which have replaced the ancient ramparts. The most remarkable buildings are—the cathedral, which dates from the 13th century, and is decorated in the interior with tapestry and wood carving of the finest description; and the church of St.-Michel which has a fine interior, but its exterior has been pronounced hideous. The town is extending towards the harbour, on the rocks above which stands the ancient tower De-Cesson 246 feet high, which now serves for a landmark to sailors. Horse-races are held on the extensive sands along the bay in the month of July. St.-Brieuc is the seat of a bishop, has tribunas of first instance and of commerce, a chamber of com-

merce, communal and ecclesiastical colleges, and a school of hydrography. The manufactures consist of linsey-wolsey, cloth, swanskins, gilt buttons, cotton yarn, beer, paper, and leather; there is also a considerable commerce in corn, flax, hemp, honey, butter, tallow, cattle, and vegetables. Lamballe, a pretty town with a population of 4205, stands on a hill above the Gouessan, and is said to be in the territory of the Ambiliati, mentioned by Julius Cæsar ('Bell. Gall.,' iii. 9). Paimpol, at the mouth of the Trieux, has a good harbour, a tribunal of commerce, a naval school, and 2100 inhabitants. Plœuc, 15 miles from St.-Brieuc, has 5343 inhabitants, who trade in yarn, hemp, butter, and cattle. Phouha, near the coast, is situated on a hill, at the intersection of 7 roads, which form as many streets, and has a population of 4818. Quintin, in a pretty valley on the Gouet, has several fine linen factories, blast furnaces, iron foundries, and paper mills. It is the seat of a tribunal of commerce, and has 4112 inhabitants. The town-house and the old cathedral are remarkable buildings, the latter especially so, in consequence of all the pillars that support the roof being some feet out of the perpendicular. There are some Druidical remains near this town.

In the arrondissement of Dinan, the chief town is Dinan, which stands on a steep hill on the left bank of the Rance, has a tide harbour for vessels of 90 tons, a tribunal of first instance, ecclesiastical and communal colleges, and 7533 inhabitants. The town, which is surrounded by walls and entered by 4 gates, is generally ill-built and ill-laid out; the houses are mostly of wood. The church of St.-Sauveur, in which the heart of Bertrand Du Guesclin is deposited, the church of St.-Malo, the old citadel now used as a prison, and the gates of the town are the most remarkable structures. Sail cloth, linen, calico, woollens, leather, pottery, and sugar are made; there is also an active trade in timber, planks, seeds, slates, Norway deals, salt, &c., by the Canal-de-l'Ille-et-Rance. Dinan is much frequented for its mineral waters. A steam-boat runs daily to St.-Malo and back; the passage down the Rance is most picturesque. The other towns are — Broons, the birthplace of Bertrand du Guesclin, to whom a monument has been lately erected on the ruins of the castle of Lamotte-Broons; population, 2504: Corseul, which is built among the ruins of an ancient town, and is said to take its name from the Gallic tribe, Curiosolites [BRETAGNE]; it has 4236 inhabitants: Evran, on the Canal-de-l'Ille-et-Rance, which is a place of some trade, with a population of 4163: and Ploubalay, which has a population of 2536.

In the arrondissement of Loudéac, the chief town Loudéac, 30 miles S. from St.-Brieuc, has a tribunal of first instance, a consultative chamber of manufactures, a college, and 6521 inhabitants, who manufacture iron, paper, and linen, and trade in slates, cider, &c. This town is the centre of a large linen trade. Mur, near the left bank of the Blavet, has 2767 inhabitants; Plouguenast, near the Lié, has 3622, Merdrignac, 18 miles from Loudéac, has iron foundries, and a population of 2894; and Uzel, on a hill above the Oust, has a consultative chamber of manufactures, and 2100 inhabitants.

In the arrondissement of Lannion, the chief town Lannion, an ill-built place near the mouth of the Guer, has a tide-harbour, a tribunal of first instance, a college, and 5650 inhabitants, who trade in deals, Bordeaux wine, colonial produce, corn, and the productions of the department. La-Roche-Derrien, formerly famous for the ancient castle of the Counts of Penthièvre, which is often mentioned in the old tales of chivalry, is a small place 12 miles from Lannion. Lezardieu, at the mouth of the Leff, has 2934 inhabitants. Perros-Guirec, on the coast, has a safe tide-harbour, sheltered by the Isle of Thomé, and contains a population of 2365. Plestin, in the north-western angle of the department, has 4355 inhabitants, who trade in iron, coal, timber, corn, &c., by the little harbour of Toul-an-Héry, about a mile and a quarter distant. Plouaret, a little S.E. of Plestin, has 5241 inhabitants. Tréguier, on the river Tréguier (which is formed by the junction of the Guindy and the Jaudy, and is navigable for 9 miles from its mouth), is a well-built place, with an excellent deep harbour and roadstead; it has 3382 inhabitants, who are actively engaged in trade.

In the arrondissement of Guingamp, the chief town Guingamp, on the Trioux, was formerly one of the most considerable places in the county of Penthièvre. It is situated in a vast plain 21 miles W.N.W. from St.-Brieuc, and was once surrounded by walls, part of which remain. There are several good buildings in the town, which has a tribunal of first instance, and 6796 inhabitants, who manufacture linen, leather, hats, twine, &c., and trade in iron, brandy, wine, and the produce of the department. Begard, N.W. of Guingamp, has 3821 inhabitants. Belle-Isle-en-Terre, a small place near the Guer, in the centre of an iron district, has several important blast furnaces and foundries. Bourbriac, S. of Guingamp, has 4114 inhabitants, who trade in cattle and farm produce. Ploëzal, 15 miles from Guingamp, has a population of 3107.

The department forms the see of the bishop of St.-Brieuc, is under the jurisdiction of the Cour Royale and University Academy of Rennes, and is included in the 13th Military Division, of which Rennes is head-quarters. It returned under the late Monarchy 6 Members to the Chamber of Deputies, but now, under the Republic, it has 16 representatives in the National Assembly.

(*Dictionnaire de la France;* Balbi, *Géographie; Annuaire des Côtes-du-Nord; Decree of the Provisional Government of the French Republic.*)

END OF VOL. IV.

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